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Penguin Books
Semantics

Geoffrey Leech was born in Gloucester in 1936 and educated at Tewkesbury Grammar School and University College London, where he read English. From 1962 to 1969, when he received his Ph.D., he was Assistant Lecturer, then Lecturer in English at University College London. Since 1969 he has been at the University of Lancaster. He studied linguistics at the Massachusetts Institute of Technology in 1964–5 as a Harkness Fellow, and in 1972 was Visiting Professor at Brown University, Providence, Rhode Island. He has previously published *English in Advertising* (1966), *A Linguistic Guide to English Poetry* (1969), *Meaning and the English Verb* (1971), *Explorations in Semantics and Pragmatics* (1980), *Principles of Pragmatics* (1983) and has co-authored, with Randolph Quirk, Sidney Greenbaum and Jan Svartvik, *A Grammar of Contemporary English* (1972), with Jan Svartvik, *A Communicative Grammar of English* (1975), with Michael Short, *Style in Fiction: A Linguistic Introduction to English Fictional Prose* (1981), with Margaret Deuchar and Robert Hoogenraad, *English Grammar for Today* (1982) and with Randolph Quirk, Sidney Greenbaum and Jan Svartvik, *A Comprehensive Grammar of the English Language* (1985). He is also co-editor (with C. N. Candlin) of *Computers in English Language Teaching and Research* (1986) and (with R. Garside and G. Sampson) *The Computational Analysis of English* (1987). He is Professor of Linguistics and Modern English Language at the University of Lancaster where he also holds the post of Joint Director of the Unit for Computer Research on the English Language. He is married, with two children.

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Geoffrey Leech

Semantics

The Study of Meaning

Second Edition

Penguin Books

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Preface to Second Edition

Although the study of meaning is as old as scholarship itself, the last fifteen years have seen an explosive growth of mental activity in the field of semantics. New theories and new models have developed in profusion; new ideas have superseded old ones at a rapid rate. So, less than five years after its original publication, I was already beginning to feel quite strongly that this book was out of date. This second edition is my attempt to rethink and revise it, taking account of the most significant developments of the last few years, as well as my own sense of the inadequacies of the first edition.

The chapter-by-chapter plan remains largely as it was, but other revisions are substantial. For those familiar with the first edition, the most radical changes are these: (1) I have introduced a new Chapter 7, on problems and extensions of componential analysis. (2) I have replaced the last two chapters by four chapters, thereby giving more emphasis to the expanding influence of pragmatics (the study of language in use, and in relation to its users) on semantics. (3) I have replaced the system of diagrams and notations used in the first edition by a somewhat different system which will, I hope, be both simpler and clearer. This change of notation goes with a theoretical change from a phrase structure model to a dependency model in the representing of semantic structures. The chapters which are least altered are the first four. The Bibliography and the section entitled Background Reading have been thoroughly revised.

I am very grateful to Mahavir Jain for his care in proof-reading and indexing.

I am also very grateful to those friends and colleagues, particularly Randolph Quirk and Sadao Ando, who have, by their comments on the first edition, helped me to produce what I hope will be a considerably improved introduction to semantics.

Geoffrey Leech

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Symbols

The following symbolic conventions (mostly confined to the later chapters of the book) are listed for convenience, together with the pages on which they are discussed:

* (asterisk) before an utterance, sentence, etc. indicates that it is unacceptable or ill-formed.

'boy' (etc.) – a cited expression in single quotation marks indicates a meaning rather than a form (p. 79).

boy (etc.) – a cited expression in italics indicates a form rather than a meaning.

the (etc.) – a word in bold-face type indicates a logical operator, or logical feature of meaning (pp. 164–75).

–ADULT (etc.) – a sequence of small capitals, whether or not preceded by a discriminator such as +, –, signifies a semantic feature (pp. 89 ff, 115).

a, *b*, *c*, ..., *P*, *Q*, *R*, ... are variables representing arguments and predicates (pp. 132–3).

(...) – brackets enclose a predication (i.e. a main or subordinate predication) (pp. 132–3, 142–3).

⟨...⟩ – angle brackets enclose a downgraded predication (p. 145).

(*a* . *P* . *b*) – full-stops separate the elements of a two-place predication (p. 132).

(*a* : *P*) – a colon separates the elements of a one-place predication.

(boy. LOVE. girl) etc. – lower-case words informally represent arguments; upper-case words informally represent predicates (pp. 133–4).

The prime markings ′, ″, etc. are indicators of coreference (p. 159).

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Introduction

Why study semantics? Semantics (as the study of meaning) is central to the study of communication; and as communication becomes more and more a crucial factor in social organization, the need to understand it becomes more and more pressing. Semantics is also at the centre of the study of the human mind – thought processes, cognition, conceptualization – all these are intricately bound up with the way in which we classify and convey our experience of the world through language.

Because it is, in these two ways, a focal point in man's study of man, semantics has been the meeting place of various cross-currents of thinking, and various disciplines of study. Philosophy, psychology, and linguistics all claim a deep interest in the subject. But their interests tend to differ because of their different starting points: psychology the understanding of the mind; linguistics the understanding of language and languages; philosophy the understanding of how we know what we know, of the rules of right thinking, and the evaluation of truth and falsehood. Semantics has often seemed baffling because there are many different approaches to it, and the ways in which they are related to one another are rarely clear, even to writers on the subject. It has also seemed baffling because it is 'cognition turning in upon itself': an activity which may seem to have much in common with a dog chasing its own tail.

For these reasons, or simply because it is a fascinating subject, semantics has provided material for many books. But this does not mean that each new book venturing on the subject is a waste of time, or a duplication of previous effort. Each new book is its author's unique attempt to shed new light on a subject whose problems and obscurities have seemed inexhaustible.

A book of this kind cannot attempt an overall survey of the field of semantics – or at least, if it does, it will end up as a superficial compendium of what others have thought about meaning. The only sensible course is to follow one's own path through the wilderness, using the well-tried routes where they exist, but not hesitating to beat one's own trail, where necessary, into little-known territory. This is the spirit in which I write this book. I see semantics as one branch of linguistics,

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which is the study of language: as an area of study parallel to, and interacting with, those of syntax and phonology, which deal respectively with the formal patterns of language, and the way in which these are translated into sound. While syntax and phonology study the structure of expressive possibilities in language, semantics studies the meanings that can be expressed. It may convincingly be claimed that viewing semantics as a component discipline of linguistics is the most fruitful and exciting point of departure at the present time. Twenty years ago, linguistics, although a fast developing discipline in other directions, had all but abandoned semantics to the philosopher and the anthropologist. In the last fifteen years, however, there has been a swing away from a view of semantics as a messy, largely unstructured intellectual no-man's-land on the fringes of linguistics, and a tendency to accord to it a more and more central position in linguistic studies – a position which, most people now agree, it holds as of right. The concentration on semantics has come not only from linguists, but from others. In semantics we have witnessed an unusual convergence of disciplines; the techniques and investigations of philosophy and cognitive psychology, in particular, have helped to lay a surer foundation for linguistic studies.

Linguistics itself has brought to the subject of semantics a certain degree of analytic rigour combined with a view of the study of meaning as an integrated component within the total theory of how language works. To study the 'content' side of language without reference to the 'expression' side ultimately makes no more sense than to study the 'expression' side without the 'content' – something linguists once tried, and found barren.

The strength of the integrated view is that it makes possible a transfer to semantics of techniques of analysis which have proved successful with other aspects of language. But the extension of the horizon of semantics in one direction has limited it in another direction: the precise analytic methods developed in the study of grammar and phonology only apply to that part of meaning which is traditionally called 'conceptual' or 'cognitive'; other parts, which may be lumped together as 'connotative' or 'associative' meaning, have been somewhat neglected. One of my aims will be to help to correct this imbalance.

This book falls into two parts, between which Chapter 5 ('Is Semantics Scientific?') acts as a bridge. The first four chapters form a 'pretheoretical' introduction in which I set out to give a general orientation to the subject, by trying to steer a careful course between the many misleading attitudes and approaches to which semantics is prone, and exploring the issues of communication and meaning which bring semantics into closest contact with the problems of modern life. Attention is given to questions

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such as the conceptual organization of the human mind (Chapter 3) and the 'strategic semantics' of advertising and propaganda (Chapter 4).

From Chapter 6 to the end, the book concentrates on the central, cognitive aspect of meaning, and presents a semantic theory on principles which have developed within modern linguistics. In this latter section of the book I consider the details of how the semantic structure of a language is organized, and inquire into such questions as 'How does one provide an exact definition of a given word?' 'How does one write rules to explain how such-and-such a sequence of phonetic symbols has such-and-such a meaning?' This theoretical study of meaning can be intellectually very exciting, but pursued to the extreme precision of mathematical formulation, it becomes highly complex, abstract and problematic. All I can do in an introductory book of this kind is to provide an idea of the types of analysis involved, and of the reasons which lead one to adopt one solution rather than another to problems of semantic description.

It is a considerable jump from the introductory discussion of human communication to the rarified field of theoretical semantics, and persevering readers who reach the later chapters will notice something of 'a change of gear' and an increase of difficulty, particularly in Chapters 8 and 12 to 17. There may well be some people who will blame me for trying to incorporate two such disparate types of investigation in the same book. But I believe this attempt can be justified: general issues of communication can only be fully appreciated in the context of a precise understanding of the conceptual/logical structure of language (there are many points in Chapters 1 to 4 at which I rely on more detailed explanations later in the book); conversely, theoretical semantics can easily lose contact with practical problems of communication, and so can suffer from a somewhat distorted, etiolated view of the subject it is meant to be studying (the formal logics of philosophers provide instances of this). In other words, I firmly believe that there is much to be gained from trying to bring 'pure' and 'applied' semantics together.

Semantics was popularized in the 1930s and 1940s by a school of thought – that of 'general semantics' – which holds that the study of communicative processes can be a powerful force for good in the resolution of human conflict, whether on an individual, local, or international scale. Although I would hesitate to make such positive claims as this group (which tends, in my view, to take a rather naïve view of the causes of conflict), it must be true that the more we understand the cognitive and communicative structures of language, the better we are able to recognize and control the 'pathological' or destructive elements

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in communication, and the better we are able to appreciate and to foster the forces that make for concord.

This said, it has to be conceded that the primary appeal of semantics is an intellectual one, similar in some respects to that of mathematics or of any pure science. Only after seeking understanding for understanding's sake can one acquire the wisdom which consists in using that understanding for good ends.

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1. Meanings of Meaning

Ogden and Richards and After

The word 'meaning' and its corresponding verb 'to mean' are among the most eminently discussable terms in the English language, and semanticists have often seemed to spend an immoderate amount of time puzzling out the 'meanings of *meaning*' as a supposedly necessary preliminary to the study of their subject. Perhaps the best-known book ever written on semantics, that which C. K. Ogden and I. A. Richards published in 1923, had the very title *The Meaning of Meaning*, and contained, on pp. 186–7, a list of as many as twenty-two definitions of the word, taking different non-theoretical or theoretical starting points. Here, for interest's sake, is a selection of the meanings given:

an intrinsic property
the other words annexed to a word in the dictionary
the connotation of a word
the place of anything in a system
the practical consequences of a thing in our future experience
that to which the user of a symbol actually refers
that to which the user of a symbol ought to be referring
that to which the user of a symbol believes himself to be referring
that to which the interpreter of a symbol
  (a) refers
  (b) believes himself to be referring
  (c) believes the user to be referring.

Ogden and Richards, presenting this list, tried to show how confusion and misunderstanding come about because of lack of agreement about such basic terms as *meaning*. But they looked forward to a day when (as a result of the education of the public through their book and by other channels) 'the Influence of Language upon Thought is understood, and the Phantoms due to linguistic misconception have been removed'; from here, the way would be open, they felt, 'to more fruitful methods of Interpretation and to an Art of Conversation by which the communicants can enjoy something more than the customary stones and scorpions'.

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2 Semantics

The fascinating glimpse of a utopia of pure, polite conversation given us by Ogden and Richards is in part their own peculiar view of things, but other semanticists (notably those of the General Semantics movement inaugurated by Korzybski's *Science and Sanity* in 1933) have also seen the solution of problems of meaning, thought, and communication as a potential cure-all for the ills of modern society. Other investigators have also, like Ogden and Richards, looked towards science for the clarification of semantic concepts. Ogden and Richards, in 1923, felt confident enough in the progress of science to assert:

> During the last few years advances in biology, and the psychological investigation of memory and heredity, have placed the 'meaning' of signs in general beyond doubt, and it is here shown that thought and language are to be treated in the same manner. (p. 249)

Ten years later, Bloomfield, in *Language* (1933), the most influential book on language to be published between the wars, similarly hitched semantics to the onward march of science, but with a slightly different emphasis. It was not the scientific study of mental phenomena (thought and symbolization) that he saw as providing the semanticist's answers, but the scientific definition of everything to which language may refer:

> We can define the meaning of a speech-form accurately when this meaning has to do with some matter of which we possess scientific knowledge. We can define the names of minerals, for example, in terms of chemistry and mineralogy, as when we say that the ordinary meaning of the English word *salt* is 'sodium chloride (NaCl)', and we can define the names of plants or animals by means of the technical terms of botany or zoology, but we have no precise way of defining words like *love* or *hate*, which concern situations that have not been accurately classified – and these latter are in the great majority. (*Language*, p. 139)

Bloomfield, then, was less sanguine about the wonders of science than Ogden and Richards. His conclusion, not surprisingly, sounded a pessimistic note, which turned out to be the virtual death-knell of semantics in the U.S.A. for the next twenty years: 'The statement of meanings is therefore the weak point in language-study, and will remain so until human knowledge advances very far beyond its present state.' (p. 140).

Taken to its logical terminus, Bloomfield's argument implies a vision of an eventual period when everything would be capable of authoritative scientific definition, or in simpler words, when everything there was to be known would be known about everything – something even more illusory than Ogden's and Richards's idyll of a conversational paradise. Bloomfield was writing at a time when there was interest in the concept of 'unified science' – that is, in the idea that all sciences, from physics to psychology, could be cemented together into one vast monolith

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of knowledge – but even allowing for this, his picture of the semanticist waiting patiently for the accumulation and solidification of the totality of human knowledge relies on what in hindsight is a naïve view of the nature of science. Three flaws were latent in Bloomfield's approach.

Firstly, at any given time, there are usually competing scientific accounts of the same phenomenon. Which of them do we choose for our definition?

In the second place, science does not progress in the manner of a tub filling up with water – it progresses by a continuing process of revision and clarification, leading to greater clarity and depth of understanding. Since scientific statements are by nature provisional, it is difficult to foresee a time when everyone would be sufficiently confident that no further significant reformulations would be forthcoming to be able to start safely defining words like *love* and *hate*.

Thirdly, a definition in terms of a scientific formula, such as *salt* = NaCl, simply exchanges one set of linguistic symbols for another, and so postpones the task of semantic explication one step further. Assuming that scientific language, like everyday language, has meaning, we are faced with the problem of defining the meaning of 'NaCl'; and if we could replace this with a more precise or informative scientific formula, the same problem would arise with that, and so on *ad infinitum*. In other words, Bloomfield's recipe for discovering meaning leads into a path of infinite regression; it turns out to be a dead end not only on practical but on logical grounds.

The problems of Ogden's and Richards's and Bloomfield's approaches to meaning arise mainly from the determination to explain semantics in terms of other scientific disciplines. One may argue that much of the apparent ambiguity of the term *meaning*, which bothered Ogden and Richards, has the same source. Certainly most of the twenty-two definitions given by them (as the examples on p. 1 above show) are the authors' wording of technical definitions of philosophers, psychologists, philologists, literary critics, and other specialists; and much of the conflict between these definitions is explicable in terms of each specialist's need or desire to tailor the study of meaning to the requirements of his own field. So a philosopher may define meaning, for his purposes, in terms of truth and falsehood; a behaviourist psychologist in terms of stimulus and response; a literary critic in terms of the reader's response; and so on. Naturally enough, their definitions, springing from diverse frames of reference, will have little in common.

While admitting that study in related fields could provide insight for the student of semantics, many people will wonder why semantics need be considered dependent, in this way, on extrinsic considerations. In fact,

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as soon as we start to treat semantics as deserving its own frame of reference instead of having to borrow one from elsewhere, we dispel many of the difficulties that have beset its development in the past fifty years. An autonomous discipline begins not with answers, but with questions. We might say that the whole point of setting up a theory of semantics is to provide a 'definition' of *meaning* – that is, a systematic account of the nature of meaning. To demand a definition of *meaning* before we started discussing the subject would simply be to insist on treating certain other concepts, e.g. stimulus and response, as in some sense more basic and more important. A physicist does not have to define notions like 'time', 'heat', 'colour', 'atom' before he starts investigating their properties. Rather, definitions, if they are needed, emerge from the study itself.

Once this commonplace is accepted, the question of how to define *meaning*, which so preoccupied Ogden and Richards, is seen in its true colour as a red herring.

A Linguistic Starting Point for Semantics

So far I have been trying to clear the ground, by arguing that the study of meaning should be free from subservience to other disciplines. This leads naturally to the challenge: 'How then should meaning be studied? What sort of questions should we be trying to answer in setting up a theory of meaning? What principles should form its foundations?'

One of the keynotes of a modern linguistic approach to semantics is that there is no escape from language: an equation such as *cent = hundredth of a dollar* or *salt = NaCl* is not a matching of a linguistic sign with something outside language; it is a correspondence between two linguistic expressions, supposedly having 'the same meaning'. The search for an explanation of linguistic phenomena in terms of what is not language is as vain as the search for an exit from a room which has no doors or windows, for the word 'explanation' itself implies a statement in language. Our remedy, then, is to be content with exploring what we have inside the room: to study relations *within* language, such as paraphrase or synonymy (both terms meaning roughly 'sameness of meaning'). Paraphrase, and some other relations of meaning capable of systematic study, are illustrated below. *Entailment* and *presupposition* are types of meaning-dependence holding between one utterance and another; *logical inconsistency* is a type of semantic *contrastiveness* between utterances.

1. *X*: The defects of the plan were obvious
   IS A PARAPHRASE OF *Y*: The demerits of the scheme were evident.

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2. *X*: The earth goes round the sun
   ENTAILS *Y*: The earth moves.
3. *X*: John's son is called Marcus
   PRESUPPOSES *Y*: John has a son.
4. *X*: The earth goes round the sun
   IS INCONSISTENT WITH *Y*: The earth is stationary.

These are some of the relations of meaning between two utterances *X* and *Y* that a semantic theory may profitably try to explain; we shall look at these, and other, relations of meaning more carefully later on (pp. 73–82).

A second principle underlying many present-day linguistic approaches to semantics is seeing the task of language study as the explication of the LINGUISTIC COMPETENCE of the native speaker of a language; that is, the provision of rules and structures which specify the mental apparatus a person must possess if he is to 'know' a given language. Applied to the semantic end of language, this leads to the question 'What is it to *know* the meaning of a word, a sentence, etc.?' rather than just 'What is meaning?'. And among the evidence for such knowledge one may include recognizing semantic relations such as 1–4 above.

Another type of evidence that a person knows the semantics of a language is his recognition that certain utterances or expressions, although they obey the grammatical rules of the language concerned, are 'unsemantic' in the sense that they are aberrant or odd from the point of view of meaning. One such oddity is a TAUTOLOGY, or a statement which has to be true by virtue of its meaning alone, such as:

Monday came before the day which followed it.

We rarely have occasion to make such statements, because (except where we are explaining an unfamiliar linguistic usage) they tell a listener nothing that he did not know before, and so are communicatively empty. At the opposite side of acceptability are CONTRADICTIONS, or statements which are, by virtue of meaning, necessarily false:

Everything I like I dislike.
My brother had the toothache in his toe.

These are more decidedly deviant than tautologies: they are not just informationally vacuous, but are downright nonsensical. Modern linguistics has concentrated, in defining what a given language is, on specifying which sentences are acceptable within that language, and which are not – that is, on marking the boundaries between what is possible and impossible within the rules of the language. This has naturally brought into focus the native speaker's ability to discriminate between

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'grammatical' and 'ungrammatical' sentences, and it is this ability in the area of meaning that we appeal to if we say that an ability to distinguish semantically odd sentences from meaningful sentences is a manifestation of his knowledge of rules of meaning in his language.

Semantically odd or deviant sentences are not restricted to contradictions and tautologies. There are, for example, questions which logically permit only one answer (*yes* or *no*), and so do not need to be asked: *Has your mother any sons or daughters?* There are also sentences which are unanswerable, because they have absurd presuppositions: *Do you know how the man who killed his widow was punished?* This sort of whimsicality is a reminder of the 'tangle-talk' or nonsense rigmaroles which children indulge in as a kind of verbal sport:

> I went to the pictures tomorrow
> I took a front seat at the back
> I fell from the pit to the gallery
> And broke a front bone in my back.
> A lady she gave me some chocolate,
> I ate it and gave it her back;
> I phoned for a taxi and walked it,
> And that's why I never came back.
>
> (Opie, *The Lore and Language of Schoolchildren*, p. 25)

The natural fascination children find in beating the bounds of meaningfulness might be counted among the symptoms of that 'intuitive grasp' of meaning, or SEMANTIC COMPETENCE as the linguist would call it, shared by the speakers of a language.

Language and the 'Real World'

But for the linguist, as for the philosopher, a crucial difficulty lies in drawing a boundary not simply between sense and nonsense, but between the kind of nonsense which arises from contradicting what we know about language and meaning, and the kind of nonsense which comes from contradicting what we know about the 'real world'. If a speaker of English is asked to comment on the utterance

(1) My uncle always sleeps standing on one toe

he might exclaim: 'But that can't be true! No one can sleep like that!' His response would be similar to what he might say if faced with the contradiction

(2) My uncle always sleeps awake.

But on reflection, he would probably explain the two absurdities

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differently. Sentence (1) would be unbelievable because of what he knows about the world we live in, more specifically about the posture in which sleep is possible. Sentence (2) would be more than unbelievable – it would point to the unimaginable, because of the contradiction between the two meanings of *sleep* and *awake*. But both statements would strike him as absurd in the same way, to the extent that they would both be necessarily false.

An analogy can be drawn here between the rules of a language and the rules of a game. Events within a football match, for instance, may be impossible (a) because they are against the rules of the game, or (b) because they violate natural laws regarding physical strength of human beings, the inability of footballs to defy ordinary laws of motion (e.g. by moving in the air like boomerangs), etc. Thus a football report that 'The centre-forward scored a goal by heading a ball from his own goal-line' would be disbelieved as physically impossible, while 'The centre-forward scored a goal by punching the ball into the goal-mouth' would be disbelieved on the grounds that if such a thing happened, the game could not have been football.

The difference felt between (1) and (2) above is brought out in the different strategies we adopt in trying to make sense of them. It seems to be an incontrovertible principle of semantics that the human mind abhors a vacuum of sense; so a speaker of English faced with absurd sentences will strain his interpretative faculty to the utmost to read them meaningfully. For (1), *My uncle always sleeps standing on one toe*, two strategies of interpretation seem possible. The first is to assume a TRANSFER OF MEANING by which either *sleeps* or *standing on one toe* is understood in a new or unusual sense. *Standing on one toe*, for instance, might be taken as a hyperbole or exaggerated substitute for 'topsy-turvy', or 'in a weird posture'. The second strategy is to imagine some miraculous, unprecedented situation (e.g. the uncle's having subjected himself to training in a hitherto unpractised version of yoga) in which this statement might be true. For (2) *My uncle always sleeps awake*, however, only the first strategy of transfer of meaning can be applied: the solution here must be to resolve the semantic conflict between 'sleeping' and 'waking' by (for example) understanding *sleeps* in a metaphorical way as 'behaves as if asleep'. A factual absurdity can be made sensible by extending one's imagination to the conception of a possible world (perhaps a dream world or fictional world) in which it could be true. A logical contradiction is on the other hand a linguistic absurdity, which, if it is to be made meaningful, requires a linguistic remedy, a 'tampering with the rules of the language game', just as the impossible manoeuvre described under (b) above would require a rewriting of the rules of football.

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The distinction between language (including 'logic') on the one hand, and factual or 'real world' knowledge on the other, will be explored further in Chapter 2 (pp. 12–13), and in Chapter 11 we shall also investigate the notion of transfer of meaning, and see in what sense it amounts to a 'tampering with language'. At this stage, let us simply note that such a distinction is felt to exist, but that it is not easy for a linguist or a philosopher to justify it, or to prescribe how to draw a line in individual cases. Nevertheless, practical considerations, if no others, compel us to make such a distinction, for to do otherwise would be to enlarge the domain of semantics (as Bloomfield by implication enlarged it) into the impossibly vast study of everything that is to be known about the universe in which we live. We shall look at this distinction more critically in Chapter 5 (pp. 82–6).

Summary

In this chapter I have tried to make three main points about the study of meaning:

1. That it is mistaken to try to define meaning by reducing it to the terms of sciences other than the science of language: e.g. to the terms of psychology or chemistry.

2. That meaning can best be studied as a linguistic phenomenon in its own right, not as something 'outside language'. This means we investigate what it is to 'know a language' semantically, e.g. to know what is involved in recognizing relations of meaning between sentences, and in recognizing which sentences are meaningful and which are not.

3. That point (2) rests on a distinction between 'knowledge of language' and 'knowledge of the "real world"'.

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2. Seven Types of Meaning

Some people would like semantics to pursue the study of meaning in a wide sense of 'all that is communicated by language'; others (among them many modern writers within the framework of general linguistics) limit it in practice to the study of logical or conceptual meaning in the sense discussed in Chapter 1. Semantics in the former, wider sense can lead us once again into the void from which Bloomfield retreated with understandable misgivings – the description of all that may be the object of human knowledge or belief. On the other hand, we can, by carefully distinguishing types of meaning, show how they all fit into the total composite effect of linguistic communication, and show how methods of study appropriate to one type may not be appropriate to another.

On this basis, I shall break down 'meaning' in its widest sense into seven different ingredients, giving primary importance to logical meaning or (as I shall prefer to call it) CONCEPTUAL MEANING, the type of meaning I was discussing earlier in connection with 'semantic competence'. The six other types I shall consider are connotative meaning, social meaning, affective meaning, reflected meaning, collocative meaning, and thematic meaning.

Conceptual Meaning

CONCEPTUAL MEANING (sometimes called 'denotative' or 'cognitive' meaning) is widely assumed to be the central factor in linguistic communication, and I think it can be shown to be integral to the essential functioning of language in a way that other types of meaning are not (which is not to say that conceptual meaning is the most important element of every act of linguistic communication). My chief reason for assigning priority to conceptual meaning is that it has a complex and sophisticated organization of a kind which may be compared with, and cross-related to, similar organization on the syntactic and phonological levels of language. In particular, I would like to point to two structural principles that seem to lie at the basis of all linguistic patterning: the principle of CONTRASTIVENESS and the principle of STRUCTURE. Contrastive features underlie the classification of sounds in phonology,

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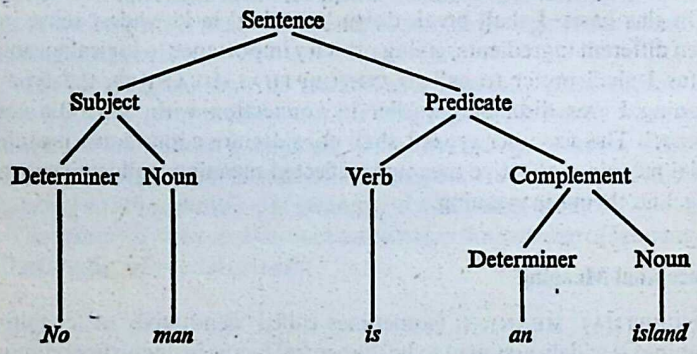
for example, in that any label we apply to a sound defines it *positively* by what features it possesses, and also by implication *negatively*, by wha features it does not possess. Thus the phonetic symbol /b/ may be explicated as representing a bundle of contrastive features + bilabial, + voice, + stop, −nasal; the assumption being that the distinctive sounds o phonemes of a language are identifiable in terms of binary, or largely binary, contrasts. In a similar way, the conceptual meanings of a language can be studied in terms of contrastive features, so that (for example) the meaning of the word *woman* could be specified as + HUMAN, − MALE, + ADULT, as distinct from, say, *boy*, which could be 'defined' + HUMAN, + MALE, − ADULT (see p. 90).

The second principle, that of structure, is the principle by which larger linguistic units are built up out of smaller units; or (looking at it from the opposite point of view) by which we are able to analyse a sentence syntactically into its constituent parts, moving from its *immediate constituents* through a hierarchy of sub-division to its *ultimate constituents* or smallest syntactic elements. This aspect of the organization of language is often given visual display in a tree-diagram:



Or it can be represented by bracketing:

{(No) (man)}{[(is)][(an) (island)]}

It has long been taken for granted that the syntax of a language is to be handled in such terms. But it is now also widely accepted that the semantics of natural language has its own counterpart of syntactic structure, or (to use in many ways a closer analogy) of the systems of symbolic logic devised by mathematicians and philosophers (see Chapters 8 and 9).

The two principles of contrastiveness and constituent structure represent the way language is organized respectively on what linguists have

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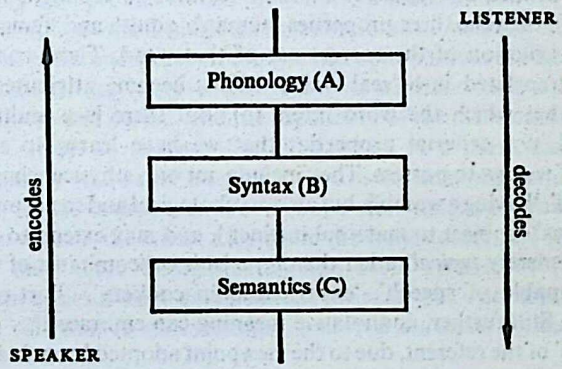
termed the PARADIGMATIC (or selectional) and SYNTAGMATIC (or combinatory) axes of linguistic structure. It will be my main aim in the latter part of this book (Chapters 6–17) to explore as fully as I can the application of these principles to semantic analysis, and so to show how methods of study devised for other levels of language can bring precision and insight to conceptual semantics.

In this discussion, I have taken for granted a third generally acknowledged principle of linguistic organization, which is that any given piece of language is structured simultaneously on more than one 'level'. At least the three following levels, in the pictured order, seem to be necessary for a full account of the linguistic competence by which we are able to generate or understand linguistic utterances:



And this means that for the analysis of any sentence, we need to establish a 'phonological representation', a 'syntactic representation' and a 'semantic representation', and the stages by which one level of representation can be derived from another. The aim of conceptual semantics is to provide, for any given interpretation of a sentence, a configuration of abstract symbols which is its 'semantic representation', and which shows exactly what we need to know if we are to distinguish that meaning from all other possible sentence meanings in the language, and to match that meaning with the right syntactic and phonological expression. The ability to match levels operates in one direction (A→B→C on the diagram) if we are DECODING, i.e. listening to a sentence and interpreting it; and in the opposite direction (C→B→A) if we are ENCODING, i.e. composing and speaking a sentence. From this account it will be clear that conceptual meaning is an inextricable and essential part of what language is, such that one can scarcely define

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language without referring to it. A 'language' which communicated by other means than by conceptual meaning (e.g. a 'language' which communicated solely by means of expletive words like *Oh! Ah! Oho! Alas!* and *Tally ho!*) would not be a language at all in the sense in which we apply that term to the tongues of men.

Connotative Meaning

More of what is distinctive about conceptual meaning will appear when we contrast it with CONNOTATIVE MEANING. Connotative meaning is the communicative value an expression has by virtue of what it *refers to*, over and above its purely conceptual content. To a large extent, the notion of 'reference' overlaps with conceptual meaning. If the word *woman* is defined conceptually by three features (+HUMAN, −MALE, +ADULT), then the three properties 'human', 'adult', and 'female' must provide a criterion of the correct use of that word. These contrastive features, translated into 'real world' terms, become attributes of the referent (that which the word refers to). But there is a multitude of additional, non-criterial properties that we have learnt to expect a referent of *woman* to possess. They include not only physical characteristics ('biped', 'having a womb'), but also psychological and social properties ('gregarious', 'subject to maternal instinct'), and may extend to features which are merely *typical* rather than *invariable* concomitants of womanhood ('capable of speech', 'experienced in cookery', 'skirt-or-dress-wearing'). Still further, connotative meaning can embrace the 'putative properties' of the referent, due to the viewpoint adopted by an individual, or a group of people or a whole society. So in the past woman has been burdened with such attributes ('frail', 'prone to tears', 'cowardly', 'emotional', 'irrational', 'inconstant') as the dominant male has been pleased to impose on her, as well as with more becoming qualities such as 'gentle', 'compassionate', 'sensitive', 'hard-working'. Obviously, connotations are apt to vary from age to age and from society to society. A hundred years ago, 'non-trouser-wearing' must have seemed a thoroughly definitive connotation of the word *woman* and its translation equivalents in European languages, just as in many non-western societies today womankind is associated with attributes foreign to our own way of thinking. It is equally obvious that connotations will vary, to some extent, from individual to individual within the same speech community: to an English-speaking misogynist *woman* will have many uncomplimentary associations not present in the minds of speakers of a more feminist persuasion.

It will be clear that in talking about connotation, I am in fact talking

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about the 'real world' experience one associates with an expression when one uses or hears it. Therefore the boundary between conceptual and connotative meaning is coincident with that nebulous but crucial distinction, discussed in Chapter 1, between 'language' and the 'real world'. This accounts for the feeling that connotation is somehow incidental to language rather than an essential part of it, and we may notice, in confirmation, that connotative meaning is not specific to language, but is shared by other communicative systems, such as visual art and music. Whatever connotations the word *baby* has can be conjured up (more effectively, because the medium is directly representational) by a drawing of a baby, or an imitation of a baby's cry. The overlap between linguistic and visual connotations is particularly noticeable in advertising, where words are often the lesser partners of illustrations in the task of conferring on a product a halo of favourable associations.

A second fact which indicates that connotative meaning is peripheral compared with conceptual meaning is that connotations are relatively unstable: that is, they vary considerably, as we have seen, according to culture, historical period, and the experience of the individual. Although it is too simple to suggest that all speakers of a particular language speak exactly 'the same language', it can be assumed, as a principle without which communication through that language would not be possible, that on the whole they share the same conceptual framework, just as they share approximately the same syntax. In fact, some recent semanticists have assumed that the same basic conceptual framework is common to all languages, and is a universal property of the human mind (see pp. 26–30).

Thirdly, connotative meaning is indeterminate and open-ended in a sense in which conceptual meaning is not. Connotative meaning is open-ended in the same way as our knowledge and beliefs about the universe are open-ended: any characteristic of the referent, identified subjectively or objectively, may contribute to the connotative meaning of the expression which denotes it. In contrast, it is generally taken as fundamental to semantic theory that the conceptual meaning of a word or sentence can be codified in terms of a limited set of symbols (e.g. in the form of a finite set of discrete features of meaning), and that the semantic representation of a sentence can be specified by means of a finite number of rules. This postulate of the finiteness and determinateness of conceptual content is modelled on the assumptions that linguists generally make when analysing other aspects of linguistic structure. Such assumptions are to some extent over-simplified, but without them it would be difficult to uphold the view of language as a finite and coherent system.

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Social and Affective Meaning

We turn now to two aspects of communication which have to do with the situation in which an utterance takes place. SOCIAL MEANING is that which a piece of language conveys about the social circumstances of its use. In part, we 'decode' the social meaning of a text through our recognition of different dimensions and levels of style within the same language. We recognize some words or pronunciations as being dialectal, i.e. as telling us something of the geographical or social origin of the speaker; other features of language tell us something of the social relationship between the speaker and hearer: we have a scale of 'status' usage, for example, descending from formal and literary English at one end to colloquial, familiar, and eventually slang English at the other.

One account (Crystal and Davy, *Investigating English Style*) has recognized, among others, the following dimensions of socio-stylistic variation (I have added examples of the categories of usage one would distinguish on each dimension):

Variation according to:

DIALECT (The language of a geographical region or of a social class)
TIME (The language of the eighteenth century, etc.)
PROVINCE (Language of law, of science, of advertising, etc.)
STATUS (Polite, colloquial, slang, etc., language)
MODALITY (Language of memoranda, lectures, jokes, etc.)
SINGULARITY (The style of Dickens, of Hemingway, etc.)

Although not exhaustive, this list indicates something of the range of style differentiation possible within a single language. It is not surprising, perhaps, that we rarely find words which have both the same conceptual meaning and the same stylistic meaning. This observation has frequently led people to declare that 'true synonyms do not exist'. If we understand synonymy as complete equivalence of communicative effect, it is indeed hard to find an example that will disprove this statement. But there is much convenience in restricting the term 'synonymy' to equivalence of conceptual meaning, so that we may then contrast conceptual synonyms with respect to their varying stylistic overtones:

steed (poetic)	domicile (very formal, official)
horse (general)	residence (formal)
nag (slang)	abode (poetic)
gee-gee (baby language)	home (general)

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cast (literary, biblical)	diminutive (very formal)
throw (general)	tiny (colloquial)
chuck (casual, slang)	wee (colloquial, dialectal)

The style dimension of 'status' is particularly important in distinguishing synonymous expressions. Here is an example in which the difference of status is maintained through a whole sentence, and is reflected in syntax as well as in vocabulary:

(1) They chucked a stone at the cops, and then did a bunk with the loot.
(2) After casting a stone at the police, they absconded with the money.

Sentence (1) could be said by two criminals, talking casually about the crime afterwards; sentence (2) might be said by the chief inspector in making his official report. Both could be describing the same happening, and their common ground of conceptual meaning is evident in the difficulty anyone would have in assenting to the truth of one of these sentences, and denying the truth of the other.

In a more local sense, social meaning can include what has been called the ILLOCUTIONARY FORCE of an utterance (see pp. 321–3): for example, whether it is to be interpreted as a request, an assertion, an apology, a threat, etc. The function an utterance performs in this respect may be only indirectly related to its conceptual meaning. The sentence *I haven't got a knife* has the form and meaning of an assertion, and yet in social reality (e.g. if said to the waiter in a restaurant) it can readily take on the force of a request such as 'Please bring me a knife'.

From this it is only a small step to the consideration of how language reflects the personal feelings of the speaker, including his attitude to the listener, or his attitude to something he is talking about. AFFECTIVE MEANING, as this sort of meaning can be called, is often explicitly conveyed through the conceptual or connotative content of the words used. Someone who is addressed: 'You're a vicious tyrant and a villainous reprobate, and I hate you for it!' is left in little doubt as to the feelings of the speaker towards him. But there are less direct ways of disclosing our attitude than this: for example, by scaling our remarks according to politeness. With the object of getting people to be quiet, we might say either:

(3) I'm terribly sorry to interrupt, but I wonder if you would be so kind as to lower your voices a little.

or:

(4) Will you belt up.

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Factors such as intonation and voice-timbre – what we often refer to as 'tone of voice' – are also important here. The impression of politeness in (3) can be reversed by a tone of biting sarcasm; sentence (4) can be turned into a playful remark between intimates if delivered with the intonation of a mild request.

Affective meaning is largely a parasitic category in the sense that to express our emotions we rely upon the mediation of other categories of meaning – conceptual, connotative, or stylistic. Emotional expression through style comes about, for instance, when we adopt an impolite tone to express displeasure (as in (4) above), or when we adopt a casual tone to express friendliness. On the other hand, there are elements of language (chiefly interjections, like *Aha!* and *Yippee!*) whose chief function is to express emotion. When we use these, we communicate feelings and attitudes without the mediation of any other kind of semantic function.

Reflected and Collocative Meaning

Two further, though less important types of meaning involve an interconnection on the lexical level of language.

First, REFLECTED MEANING is the meaning which arises in cases of multiple conceptual meaning, when one sense of a word forms part of our response to another sense. On hearing, in a church service, the synonymous expressions *The Comforter* and *The Holy Ghost*, both referring to the Third Person of the Trinity, I find my reactions to these terms conditioned by the everyday non-religious meanings of *comfort* and *ghost*. *The Comforter* sounds warm and 'comforting' (although in the religious context, it means 'the strengthener or supporter'), while *The Holy Ghost* sounds awesome.

One sense of a word seems to 'rub off' on another sense in this way only when it has a dominant suggestive power either through relative frequency and familiarity (as in the case of *The Holy Ghost*) or through the strength of its associations. Only in poetry, which invites a heightened sensitivity to language in all respects, do we find reflected meaning operating in less obviously favourable circumstances:

> Are limbs, so *dear*-achieved, are sides,
> Full-nerved – still warm – too hard to stir?

In these lines from *Futility*, a poem on a dead soldier, Wilfred Owen overtly uses the word *dear* in the sense 'expensive(ly)', but also alludes, one feels in the context of the poem, to the sense 'beloved'.

The case where reflected meaning intrudes through the sheer strength of emotive suggestion is most strikingly illustrated by words which have

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a taboo meaning. Since their popularization in senses connected with the physiology of sex, it has become increasingly difficult to use terms like *intercourse*, *ejaculation*, and *erection* in 'innocent' senses without conjuring up their sexual associations. This process of taboo contamination has accounted in the past for the dying-out of the non-taboo sense of a word: Bloomfield explained the replacement of *cock* in its farmyard sense by *rooster* as due to the influence of the taboo use of the former word, and one wonders if *intercourse* is now following a similar path.

COLLOCATIVE MEANING consists of the associations a word acquires on account of the meanings of words which tend to occur in its environment. *Pretty* and *handsome* share common ground in the meaning 'good-looking', but may be distinguished by the range of nouns with which they are likely to co-occur or (to use the linguist's term) collocate:

pretty	handsome
girl	boy
boy	man
woman	car
flower	vessel
garden	overcoat
colour	airliner
village	typewriter
etc.	etc.

The ranges may well, of course, overlap: *handsome woman* and *pretty woman* are both acceptable, although they suggest a different kind of attractiveness because of the collocative associations of the two adjectives. Further examples are quasi-synonymous verbs such as *wander* and *stroll* (*cows* may *wander*, but may not *stroll*) or *tremble* and *quiver* (one *trembles* with *fear*, but *quivers* with *excitement*). Not all differences in potential co-occurrence need to be explained as collocative meaning: some may be due to stylistic differences, others to conceptual differences. It is the incongruity of combining unlike styles that makes 'He *mounted* his *gee-gee*' or 'He *got on* his *steed*' an improbable combination. On the other hand, the acceptability of 'The donkey *ate hay*', as opposed to 'The donkey *ate silence*', is a matter of compatibility on the level of conceptual semantics (on such 'selection restrictions', see pp. 137–42). Only when explanation in terms of other categories of meaning does not apply do we need to invoke the special category of collocative meaning: on the other levels, generalizations can be made, while collocative meaning is simply an idiosyncratic property of individual words.

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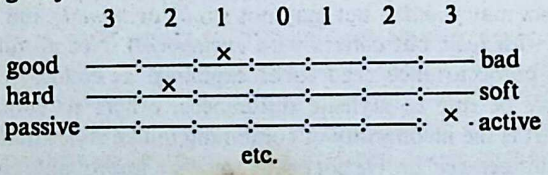
Associative Meaning: a Summary Term

Reflected meaning and collocative meaning, affective meaning and social meaning: all these have more in common with connotative meaning than with conceptual meaning; they all have the same open-ended, variable character, and lend themselves to analysis in terms of scales or ranges, rather than in discrete either-this-or-that terms. They can all be brought together under the heading of ASSOCIATIVE MEANING, and to explain communication on these levels, we need employ nothing more sophisticated than an elementary 'associationist' theory of mental connections based upon contiguities of experience. We contrast them all with conceptual meaning, because conceptual meaning seems to require the postulation of intricate mental structures which are specific to language and to the human species.

Associative meaning contains so many imponderable factors that it can be studied systematically only by approximative statistical techniques. In effect, Osgood, Suci and Tannenbaum proposed a method for a partial analysis of associative meaning when they published their ambitiously titled book *The Measurement of Meaning* in 1957. Osgood and his co-authors devised a technique (involving a statistical measurement device, the Semantic Differential) for plotting meaning in terms of a multi-dimensional semantic space, using as data speakers' judgements recorded in terms of seven-point scales. The scales are labelled by contrasting adjective pairs, such as *happy–sad*, *hard–soft*, *slow–fast*, so that a person may, for example, record his impression of the word *bagpipe* on a form in the following way:



Statistically, the investigators found that particular significance seemed to lie in three major dimensions, those of evaluation (*good–bad*), potency (*hard–soft*), and activity (*active–passive*). It is clear, even from this very brief sketch, that the method can provide no more than a *partial* and *approximate* account of associative meaning: *partial* because it entails a selection from indefinitely many possible scales, which in any case would only provide for associative meaning in so far as it is explicable in scalar terms; *approximate* because of the statistical sampling, and because a seven-point scale constitutes a cutting-up of a continuous scale

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into seven segments within which no differentiation is made – a process similar in its crudity to that of cutting up the spectrum into seven primary colours. This is not to disparage the Semantic Differential technique as a means of quantifying associative meaning: the lesson to be learned is, in fact, that it is only by such relatively insensitive tools as this that associative meaning can be systematically studied: it does not lend itself to determinate analyses involving yes–no choices and structures of uniquely segmentable elements.

Another important observation about the Semantic Differential is that it has been found useful in psychological fields such as personality studies, 'attitude measurement', and psychotherapy, where differences in the reactions of individuals are under scrutiny, rather than the common core of reactions that they share. This upholds what I said earlier in particular reference to connotative meaning: that whereas conceptual meaning is substantially part of the 'common system' of language shared by members of a speech community, associative meaning is less stable, and varies with the individual's experience.

Thematic Meaning

The final category of meaning I shall attempt to distinguish is THEMATIC MEANING, or what is communicated by the way in which a speaker or writer organizes the message, in terms of ordering, focus, and emphasis. It is often felt, for example, that an active sentence such as (1) has a different meaning from its passive equivalent (2), although in conceptual content they seem to be the same:

(1) Mrs Bessie Smith donated the first prize.
(2) The first prize was donated by Mrs Bessie Smith.

Certainly these have different communicative values in that they suggest different contexts: the active sentence seems to answer an implicit question 'What did Mrs Bessie Smith donate?', while the passive sentence seems to answer an implicit question 'Who was the first prize donated by?' or (more simply) 'Who donated the first prize?'. That is, (1), in contrast to (2), suggests that we know who Mrs Bessie Smith is (perhaps through a previous mention). The same truth conditions, however, apply to each: it would be impossible to find a situation of which (1) was an accurate report while (2) was not, or vice versa.

Thematic meaning is mainly a matter of choice between alternative grammatical construction, as in:

(3) A man is waiting in the hall.
(4) There's a man waiting in the hall.

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(5) They stopped at the end of the corridor.
(6) At the end of the corridor, they stopped.

(7) I like Danish cheese best.
(8) Danish cheese I like best.
(9) It's Danish cheese that I like best.

But the kind of contrast by ordering and emphasis illustrated by (1) and (2) can also be contrived by lexical means: by substituting (for example) *belongs to* for *owns*:

(10) My brother owns the largest betting-shop in London.
(11) The largest betting-shop in London belongs to my brother.

In other cases, it is stress and intonation rather than grammatical construction that highlights information in one part of a sentence. If the word *electric* is given contrastive stress in (12):

(12) Bill uses an *electric* razor.
(13) The kind of razor that Bill uses is an electric one.

the effect is to focus attention on that word as containing new information, against a background of what is already assumed to be known (viz. that Bill uses a razor). This kind of emphasis could have been equally achieved in English by the different syntactic construction of (13). The sentences bracketed together above obviously have, in a sense, 'the same meaning'; but all the same, we need to acknowledge that their communicative value may be somewhat different; they will not each be equally appropriate within the same context.

Demarcation Problems

I have now dealt with the seven types of meaning promised at the beginning of the chapter, but I do not wish to give the impression that this is a complete catalogue, accounting for all that a piece of language may communicate. One might, for example, have added a category for the physiological information conveyed by an act of speech or writing: information about the sex of the speaker, his age, the state of his sinuses, and so on.

A further caveat about the seven types of meaning: there are always problems of 'demarcation', and more especially, problems of separating conceptual meaning from the more peripheral categories. The difficulty of delimiting conceptual from connotative meaning, noted earlier, is paralleled in other borderline areas, such as that between conceptual meaning and socio-stylistic meaning:

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(1) He *stuck* the key in his pocket.
(2) He *put* the key in his pocket.

We could argue that (1) and (2) are conceptually synonymous, and that the difference between the two is a matter of style (sentence (2) is neutral, while (1) is colloquial and casual). On the other hand, we could maintain that the shift in style is combined with a conceptual difference: that *stick* in a context such as (1) has a more precise denotation than (2) and could be roughly defined as 'to put carelessly and quickly'. There is support for the second explanation in the slight oddity of the following sentences:

?*He stuck the key slowly in his pocket.
?*He stuck the key carefully in his pocket.

[The preceding asterisk, according to a convention of linguistics, signals the unacceptability of a sentence.]

Often, in fact, the solution to a problem of delimitation is to conclude that quasi-synonyms differ on at least two planes of meaning.

As a second illustration, we may take a case on the border between conceptual and collocative meaning, that of the verbs *smile* and *grin*. Do these words have different conceptual meanings, or is it just that the range of expressions with which they habitually combine is different? Few would hesitate over which of the two words to insert in:

The duchess ——ed graciously as she shook hands with her guests.
Gargoyles ——ed hideously from the walls of the building.

But the question is whether such differences in collocation spring from different conceptual and connotative content: whether, for example, a *grin* can be defined as a broader, toothier and more potentially hostile expression than a *smile*, and is more likely to be found on the face of a gargoyle than that of a duchess for that very reason. This is a particularly complex case in that differences of social and affective meaning are also clearly implicated. In fact, as already observed, affective meaning is a category which overlaps heavily with style, connotation, and conceptual content.

Intended and Interpreted Meaning

It may be wondered why I have avoided making a distinction between the INTENDED meaning, that which is in the mind of the speaker when he is framing his message, and the INTERPRETED meaning, or that which is conveyed to the mind of the listener when he receives the message. I have equated meaning in its broad sense with 'communicative effect',

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and 'communication' usually means transfer of information from a source (A) to a target (B). On this basis, one might argue that communication has only taken place if we know that what was in mind (A) has been transferred to, or copied in, mind (B). It is natural, then, that studies of meaning (particularly in philosophy) should have devoted much attention to the vexed question of the relation between meaning, intention, and interpretation. In spite of this, a linguist may feel entitled to ignore the difference between the intention of a message and its effect, because he is interested in studying the communication system itself, rather than what use or misuse is made of it. He is interested in studying the semantic aspect of the language which we may assume to be common to the minds of (A) and (B), and this includes, incidentally, studying ambiguities and other aspects of language (e.g. variability of associative meaning) which give scope for miscommunication. But the important point is that meaning, for semantics, is neutral between 'speaker's meaning' and 'hearer's meaning'; and this is surely justifiable, since only through knowing the neutral potentialities of the medium of communication itself can we investigate differences between what a person intends to convey and what he actually conveys.

All normal use of language, of course, implies some intention on the part of the speaker; but in so far as meaning implies an intention, the intention is only recoverable from the meaning itself. In other words, intentions are private but meaning is public. This applies even to social meaning: a matter to which I shall return in Chapter 16, in discussing the relation between semantics and pragmatics.

Summary

As this chapter has introduced quite a range of terms for types of meaning, it is fitting that it should end with a summary, and a suggestion or two for simplifying terminology:

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SEVEN TYPES OF MEANING

	1. CONCEPTUAL MEANING or *Sense*		Logical, cognitive, or denotative content.
	ASSOCIATIVE MEANING	2. CONNOTATIVE MEANING	What is communicated by virtue of what language refers to.
		3. SOCIAL MEANING	What is communicated of the social circumstances of language use.
		4. AFFECTIVE MEANING	What is communicated of the feelings and attitudes of the speaker/writer.
		5. REFLECTED MEANING	What is communicated through association with another sense of the same expression.
		6. COLLOCATIVE MEANING	What is communicated through association with words which tend to occur in the environment of another word.
	7. THEMATIC MEANING		What is communicated by the way in which the message is organized in terms of order and emphasis.

I have here used SENSE as a briefer term for 'conceptual meaning', (or 'meaning' in the narrower sense), and will feel free to use it for clarity and convenience from now on. For 'meaning' in the wider sense which embraces all seven types listed, it is useful to have the alternative term COMMUNICATIVE VALUE.

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3. 'Bony-Structured Concepts'

In the previous chapter I emphasized the role of language as an instrument of communication. But it is far more than this – it is the means by which we interpret our environment, by which we classify or 'conceptualize' our experiences, by which we are able to impose structure on reality, so as to use what we have observed for present and future learning and understanding. The extent to which, for example, the furthering of human knowledge through science is a *linguistic* activity has probably been underestimated. In this chapter I shall consider language, in its semantic aspect, as a conceptual system. Not as a closed, rigid, conceptual system which tyrannizes over the thought processes of its users, but as an *open-ended* conceptual system, one which 'leaks', in the sense that it allows us to transcend its limitations by various types of semantic creativity.

Language as a Conceptual System

The first question which arises is whether language is a *single* conceptual system, or whether there are as many conceptual systems as there are languages. Although much of present-day thinking has tended to hypothesize a universal conceptual framework which is common to all human language, common observation shows that languages differ in the way they classify experience. A classic instance of this is the semantics of colour words. We have, like many other creatures, the visual apparatus for discriminating colour differences, in terms of gradations of hue, brightness, and saturation. But in addition, unlike animals, we have the apparatus for categorizing these colours verbally, i.e. for placing a particular shade in one 'pigeon-hole' rather than another. For example, English (according to Berlin and Kay, *Basic Color Terms*, 1969) has a range of eleven primary colour terms ('black', 'white', 'red', 'green', 'yellow', 'blue', 'brown', 'purple', 'pink', 'orange', and 'grey'), whereas the Philippine language of Hanunóo (according to Conklin, 'Hanunóo Color Categories', 1955) makes do with four:

(*ma*)*biru* = black, dark tints of other colours

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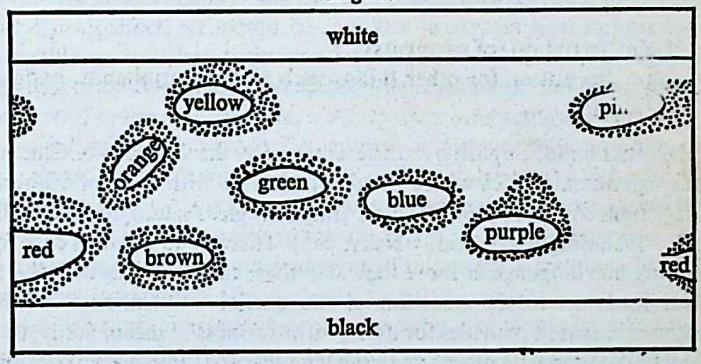
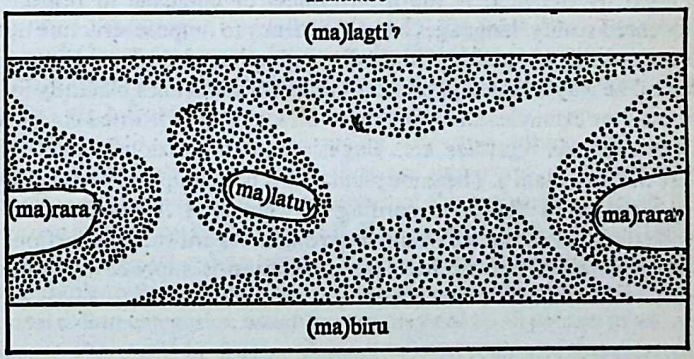
(ma)lagti? = white, light tints of other colours
(ma)rara? = maroon, red, orange
(ma)latuy? = light green, yellow, and light brown.

The difference between the two colour terminologies can be diagrammed like this:

English



Hanunóo



These diagrams are reproductions of those in Berlin and Kay 1969 (pp. 22 and 29) in which the three-dimensional colour-solid is projected on to a two-dimensional rectangle, by the omission of degrees of saturation. The neutral colour grey is not represented.

Countless other examples of this kind of linguistic relativity could be cited, even among languages such as French, German, and English, which are associated with closely related cultures: consider, for example, the

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contrast between *fleuve* ('river flowing into the sea') and *rivière* ('tributary river') as translations of the English word *river*. Going further afield, we may note the following cases where Chinese differs from English in subdividing certain categories which English treats as a unity:

{ *tái*: 'to carry something between two persons' (e.g. a ladder)
{ *ná*: 'to carry something otherwise' (e.g. a bag)

{ *chuān*: 'to put on (of garments)'
{ *dài*: 'to put on (of other things such as caps, armbands, badges, etc.).

On the other hand, English overdifferentiates by the standard of Chinese in having two categories where Chinese makes do with one: for example *zhuōzi* ('table' or 'desk'); *bēizi* ('cup', 'mug', or 'glass'); and jiǔ ('alcoholic drink' – including wine, beer, whisky, etc.). There is no obvious case for regarding one language as more logical in these respects than the other.

This leads on to the question of the partial 'arbitrariness' of the categories language provides for us. By 'arbitrariness', I mean, firstly, that conceptual boundaries often vary from language to language in a way that defies principled explanation. A second kind of arbitrariness, presupposed by the first, is the arbitrariness of language in respect to experienced reality: languages have a tendency to 'impose structure upon the real world' by treating some distinctions as crucial, and ignoring others. The way a language classifies things is sometimes blatantly man-centred. For example, alongside more biologically motivated categories such as *dog*, *tree*, *vegetable*, etc., English has *pest* ('noxious animal') and *weed* ('noxious plant'). The same plant (e.g. a buttercup) may be classified as a 'weed' or a 'flower' according to whether it is found inside or outside the garden. But we would be wrong to regard such distinctions of value as purely arbitrary: here the motivation is supplied by cultural norms, rather than by external reality.

'Relativist' and 'Universalist' Points of View

Enough has been said to illustrate the idea that each language imposes its own 'grid' on our experience, or (to change the metaphor) provides a set of 'pigeon-holes' by which we reduce our universe to order. This observation has led scholars in the past to suppose that the language one speaks profoundly affects one's thought processes and the way one interprets the world. Differences will be particularly far-reaching, for example, between the world-view of a native speaker of English, and that of a native speaker of an American Indian language in which not only

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classifications of natural phenomena, but abstract relations such as those of time and place, are represented in a very different manner. This relativistic view of the cognitive structure of languages has received the name 'the Sapir-Whorf hypothesis', after two American anthropological linguists who championed it in the 1920s and 1930s. Various arguments can be advanced against the Sapir-Whorf position. If we took up an extreme version of the view that each language forces us into its peculiar mental straitjacket, we would be at a loss to explain how in practice it is possible to translate from one language to another. Also, a single language often has alternative conceptualizations of the same phenomenon: in English, for example, we can categorize human beings by age into 'children', 'adolescents', and 'adults', or alternatively, into 'majors' and 'minors'. Furthermore, if we draw a distinction between meaning and reference (p. 12), we can say that even though there is no corresponding concept in one's own language for a concept in another language, one can nevertheless provide a description (if necessary a very detailed description) of its referent.

Recently, a more fashionable view has been that language is basically an innate, or genetically inherited capability, which all human beings are 'programmed' from birth to develop. This implies a rejection of the Sapir-Whorf hypothesis (at least in its more extreme forms), and an adoption of the position that languages share the same basic conceptual framework. It can be argued, for example, that there is a universal set of semantic categories (e.g. categories concerned with time, place, causation, animacy, etc.) from which each language draws its own subset of categories, and it is only in the choice from this subset, and in the permitted combinations in which they are expressed, that languages differ. One of the most striking instances of the 'universalist' trend is a persuasive attempt by B. Berlin and P. Kay (in *Basic Color Terms*, 1969), to show that primary colour terminology, an area of meaning seemingly so favourable to Sapir-Whorfism, is explicable in terms of a set of eleven universal colour categories, which may or may not be all present in a given language. There will be further discussion of the universalist-relativist issue in Chapter 12.

The Child's Acquisition of Conceptual Categories

How do we acquire conceptual categories in childhood? Here again, there are widely divergent points of view, extending from the dogged 'empiricism' of those who would argue that the cognitive system is learned entirely through experience from one's environment (which of course includes cultural conditioning), and the extreme *rationalism* of those who

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would claim that the cognitive framework does not have to be learned, as it is part of an inherited mental apparatus specific to the human species. This polarity of views is obviously the universalist-relativist controversy in a slightly different guise. The Sapir-Whorf position on language diversity is in alliance with the empiricist view of language acquisition, since the exposure of children to different cultural environments, in which they learn different languages, can explain how they come to learn different conceptualizations of experience. Oppositely, a faith in linguistic universals leads one to postulate an inborn disposition in human beings to develop these universals: otherwise, how could the same features come to be distributed among all the languages of the world?

Just as the empiricist viewpoint was taken for granted by linguists of the generation of Sapir and Whorf, so in the 1960s the wheel turned full circle (largely due to the influence of Chomsky in such writings as *Cartesian Linguistics* (1966) and *Language and Mind* (1968)), and a modernized version of the old philosophical doctrine of 'innate ideas' became respectable. Two *prima facie* arguments arising from modern linguistic research favour this point of view: as linguistics probes more deeply and precisely into the layers of linguistic structure, firstly it becomes more difficult to explain how a child learns so soon to manipulate the remarkable complexities of language, particularly on the semantic level, without having a 'head-start' in the form of some fairly specific language-learning capacity; and secondly, it becomes easier to see how in a multi-layered analysis of language, widely different structures in phonology and syntax can be reconciled with identical, or at least similar, structures on the semantic level.

On the other hand, that at least part of concept learning runs according to empiricist thinking is clear from the way we observe young children to acquire the conceptual categories of their language by a procedure of trial-and-error. It has long been noted that learning a concept such as 'cat' involves two complementary processes: (1) *extension*, i.e. extending the name one has learned to apply to some referents (cat_1, cat_2, cat_3, etc.) to all objects sharing certain attributes of those referents (cat_4, ... cat_n); and (2) *differentiation*, i.e. restricting the reference of a word to objects sharing certain characteristics, but not others (e.g. *not* applying the word *cat* to dogs, tigers, etc.). These two processes go hand in hand in the learning of category boundaries, but a child cannot learn both aspects simultaneously, so he tends either to *overextend* (e.g. identifying 'daddy' with all men) or to *underextend* (e.g. identifying 'man' with all strange men wearing hats). These are some of the overextensions my daughter was making at the age of two:

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WORD USED	APPARENT RANGE OF REFERENCE
choo-choo (i.e. toy engine)	toys with wheels
ba-ba (i.e. sheep)	animals in fields (including cows)
book	books, leaflets and newspapers
soo (i.e. *shoe*)	footwear generally, including boots and slippers
cup	vessels for drinking, including mugs, glasses, and the cat's bowl
Tom (her brother)	boys in general
on (i.e. *orange*)	yellow as well as orange

In some ways, her categories were less arbitrary than those instituted in the English language; for example, it takes a minute or so for us to sort out in our minds exactly what distinguishes a 'boot' from a 'shoe'. The 'shoe'/'boot'/'slipper' categories of English are difficult to justify logically, and in many ways it is more sensible to have one word for all articles of footwear.

That such trial-and-error methods are part and parcel of language learning suggests that the 'innate language capacity' in this respect takes the form of a general strategy whereby categories may be arrived at on the basis of experience, rather than a predisposition to select one set of categories rather than another. But as the 'empiricist' and the 'rationalist' points of view have at least some truth on their respective sides, it seems best, in such a speculative area as this, to adopt a rather cautious and unexciting in-between position.

The considerable amount of semantic common ground which is observed to exist between languages may have a number of different sources. Some semantic categories may be directly linked to language-learning capability: perhaps logical categories such as negation belong here. But others (e.g. those concerning time, place, colour, causation) seem to derive from general perceptual and cognitive processes of the human mind (see Clark and Clark, *Psychology and Language*, pp. 524–7). Still others appear to have a cultural origin: if all cultures share certain features of social organization and behaviour, it will not be surprising that all languages have terms for referring to kinship, possession, war, etc. Yet other 'universals' may arise from technological transmission (terms for artefacts) or from common features of the natural environment (biological and topographical terms). We need not ascribe universals of meaning exclusively to man's specific language-learning competence, but may recognize a scale extending from a core of linguistic competence to a periphery of real-world experience, where universals, if

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they exist, are due to shared environment. This scale will take in (a) purely linguistic universals, (b) psychological universals of perception and cognition, (c) cultural universals, (d) technological universals, and (e) universals of natural environment.

Much work remains to be done on the comparison of languages, and on the study of language acquisition, before we shall be in a position to assess the strength of universalist claims. But it seems certain that any informed account of the child's development of a 'semantic competence' will have to give weight to the contributions both of nature and of nurture to this process.

Creativity (1): Lexical Innovation

Discussion for and against semantic universals usually seems to assume that a language forms a static, closed conceptual system, and that once the fixed categories of the language have been acquired, our semantic equipment is complete. If this were true, it would cause us to take very seriously the sinister idea that our language is a mental straitjacket, which determines our thought processes and our assumptions about the universe.

But fortunately for the human race, language is only a mental straitjacket if we allow it to become one: the semantic system, like any other system relating to human society, is continually being extended and revised. In a language like English, new concepts are introduced in large numbers day by day and week by week, and in very little time (owing to modern mass communications) become familiar to many people. These new concepts are eventually not felt to be strange, but are fully assimilated into the language, and so become part of our standard mental equipment. The technique by which the new concepts are introduced is lexical innovation, which may take the form of NEOLOGISM (the invention of new words, or more precisely lexical items – see Chapter 10, p. 179), or TRANSFER OF MEANING (the derivation of new senses of established words). I shall confine my attention here to neologism, and leave consideration of transfer of meaning until Chapter 11.

As an example of neologism, and the effect it has of extending the conceptual system, I take the rather improbable case of the word *defenestration*, which means 'a throwing out of the window', and occurs, to my knowledge, only in the phrase 'the defenestration of Prague', which denotes an incident at the outset of the Thirty Years War, when a Bohemian Protestant assembly in Prague showed its antagonism to the Emperor by throwing his regents out of a window into a castle moat. However and whenever the word was invented (its first citation in the

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Oxford English Dictionary dates from 1620), one imagines it to have been fostered by generations of pedantic and tidy-minded history dons, who thought that 'the Defenestration of Prague' would make a fine resounding entry in a table of dates and events, or in a list of the causes of the Thirty Years War. The fact that this word has gained some currency (though its usefulness is minimal) means that a new concept of 'throwing-out-of-the-windowness' has been acknowledged by the English language, and can be manipulated in the language just as if (say) it were the name of a previously undiscovered plant. As an abstract noun, it can in principle be used in a number of functions, as the following conceivable, though fictitious news items show:

... The troublemakers were threatened with summary *defenestration* ...
... the high incidence of wanton acts of *defenestration* is causing the British Railways authorities some disquiet ...
... the *antidefenestration* movement held a public meeting ...
... their behaviour became positively *defenestrational* ...

In this way, a new word not only provides us with an institutional piece of conceptual currency, but with a base from which still other words (like *antidefenestrational*) may be constructed.

It may seem that I have made an unjustified association between creating new words and creating new concepts; that the effect of neologism is merely to condense into a single word the same meaning that could otherwise be expressed by a whole phrase or sentence. The argument, however, is that combined with this abbreviatory function, the *word* as a lexical element has a concept-defining role, as the following examples will help to show. Agent nouns such as *driver*, *copywriter*, *bed-maker* have in the first stages of their adoption a transparent equivalence to relative clauses, so that, for example, *driver* may be defined as 'a person who drives', *bed-maker* as 'one who makes beds', etc. But it would be false to claim that the single word and the syntactic construction have exactly the same meaning, for the word carries an additional message – namely, the calling into existence of a category. The word *bed-maker* asserts that there is a special institutional category of person, whose function or habit is to make beds. Notice the difference, for example, between asking the question *Is she a bed-maker?* and the question *Does she make beds?* A person questioned in this way could well reply 'Well, she does make beds, but she's not a bed-maker.' If an unlikely new word – let us say *rock-shredder* – were coined on this pattern, this would have a greater novelty value than the phrase (say) *a machine which shreds rocks*, because it would indicate that somewhere or sometime, someone had found it necessary to institute a class of object with this improbable role.

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This institutionalizing effect of neologism is observed in other types of word, such as abstract nouns and adjectives. We have *McCarthyism*, *Gaullism*, and more recently *Thatcherism*, but no **Heathism*, **Nixonism* or **Brezhnevism* (the asterisk is a way of marking non-existent or illegitimate expressions); but if the latter words were brought into use, they would impel us to search for some special *-ism* – a philosophy or way of life – that we could associate with these political figures. Advertisers are fond of coining new adjective compounds, such as '*ready-to-eat* cereal', '*top-of-the-stove* cookery', and part of the reason for this seems to be that the compound encapsulates a special, perhaps newly invented idea which the advertiser wants us to associate with his product: 'top-of-the-stove cookery' is a new concept of cooking, in which presumably the housewife does not have to bend down annoyingly to take things out of the oven; a 'ready-to-eat cereal' is an especially convenient sort of cereal that does not need to be prepared.

It is a symptom of the 'concept-forming' power of the word that once derived, a new word is launched on a semantic course of development independent of the meaning of the elements which compose it. When it was first used, *baby-sitter* no doubt had a meaning something like 'a person who *sits* with a *baby* (while the parents are out)'; but since then, the baby-sitting institution has broadened into something much more general than its name implies; it can apply to children beyond the age of infancy, and of course, a 'baby-sitter' can keep an eye on his or her charges without once taking up a sitting posture.

If neologism represents a type of linguistic creativity, it is the type of creativity that one finds supremely in the language of technology and of science, rather than in literature. Scientists are continually adapting and reordering their conceptual apparatus in order to give a precise explanation of what they observe; in order, we might say, to reduce the universe to order in new and improved ways. One has only to consider the vast influx of new terminology in a rapidly developing field such as computer science and technology (terms like *megabit*, *flip-flop*, *on-line*, *byte*, and *floating-point underflow*), to realize how adaptable language has to be to meet the new demands man makes upon it.

The Anti-Creative Tendency in Language: 'Jargonization'

The metaphor which seems to characterize lexical innovation most usefully is that of a capsule or receptacle or package into which a particular semantic content is placed, so that it can henceforward be manipulated and shunted about as an indivisible unit of meaning. In fact, all categorization in language can be viewed as 'prepackaged experience' in this

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way, and it is important to see such 'prepackaging' as a mixed blessing. It is a good (and indeed necessary) thing from one point of view, for without it we could not have an ordered view of the universe at all; we could not build upon knowledge acquired at previous stages of our culture, or even communicate at all except by a rudimentary sign-system like those that some animal species have.

But on the other hand, the packaging has its bad side (as suggested, indeed, by the phrase 'prepackaged experience'), in that we are always in danger of accepting the convenient packages as a substitute for the underlying reality. The packages (whose size and shape, as we have seen, are often arbitrarily fixed by the language) are like paper currency, which is simple and convenient to use, and works well so long as everyone accepts the benign fiction that such-and-such a piece of paper is worth such-and-such an amount of gold. It is both the great virtue and the great vice of linguistic categories that they simplify things for us, by disregarding many of the boundaries and gradations that could theoretically be distinguished. Whether simplification amounts to misleading oversimplification depends very much on individual cases.

One noted type of simplification arises with binary polar contrasts (see p. 100) such as *strong/weak, hard/soft, rich/poor.* In reality, there is a gradual transition, not a clear-cut boundary, between one category and another. But instead of saying (for example) that Mr Jones is 5′ 0″ and Mr Smith is 6′ 0″ tall against a national average of 5′ 8″, it is much simpler just to say that Mr Jones is *short* and Mr Smith is *tall.*

This polarizing tendency has been summed up (by Alfred Korzybski in *Science and Sanity*, 1933, and by S. I. Hayakawa in *Language in Thought and Action*, 1978) in the phrase 'two-valued orientation', to be contrasted with a 'multi-valued orientation', which would give a more accurate account of the real circumstances. Two-valued thinking has its roots in the nature of language, for in all aspects of language, including semantics, it seems that binary contrasts are more common than other types of contrast. But as before, we must be careful not to overstate the extent to which man is the slave of language: language provides the means for multi-valued thinking as well as two-valued thinking, and all that can be said is that language strongly *predisposes* us to make binary distinctions, and so to impose a simplistic structure on our experiences.

A graphic account of the pressure towards two-valued thinking is given by Simone de Beauvoir in the part of her autobiography describing early childhood:

> The world around me was harmoniously based on fixed coordinates and divided into clear-cut compartments. No neutral tints were allowed: everything was in black and white; there was no intermediate position between the traitor and the

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hero, the renegade and the martyr: all inedible fruits were poisonous; I was told I 'loved' every member of my family, including my most ill-favoured great-aunts. All my experience belied this essentialism. White was only rarely totally white, and the blackness of evil was relieved by lighter touches; I saw greys and half-tones everywhere. Only as soon as I tried to define their muted shades, I had to use words, and I found myself in a world of bony-structured concepts. Whatever I beheld with my own eyes and every real experience had to be fitted somehow or other into a rigid category: the myths and the stereotyped ideas prevailed over the truth: unable to pin it down, I allowed truth to dwindle into insignificance.

Memoirs of a Dutiful Daughter, trans. J. Kirkup, Bk. I.

This view from within an alert and imaginative young mind gives an admirable picture of the inhibiting, anti-creative side of concept-formation.

The simplifying and stereotyping effect of conceptual categories, which is inherent in language anyway, can be exploited by lexical innovation in certain uses of the language, such as political journalism. This exploitation I call 'jargonization'. One of the functions of political journalism, we could say, is to interpret, to predigest, or to 'prepack' public events in a way that makes them easy to assimilate for a public that has neither the time nor the mental application to make an exact and detailed study of what is going on. For example, in reporting the struggle between communists and anti-communists in South-East Asia, terms such as *confrontation*, *escalation*, *de-escalation* and *Vietnamization* came to be used as convenient counters standing for complex happenings in a confused political situation. American administrators and politicians were stereotyped as either *hawks* or *doves* (can there be any more striking instance of two-valued thinking?). Such terms are familiar signposts, helping our minds to see a reassuring structure in what would otherwise be an incomprehensible state of flux.

Other terms have come into currency in connection with bargaining and negotiation. If one side in an industrial or international crisis makes a strategic (perhaps sensible) concession to the other, this is almost certain to be represented in some newspaper by the phrase *backing down* (i.e. coming to the verge of conflict and then yielding). A more drastic form of submission is a *climb-down*, or ignominious surrender, under pressure, of a claim one has strongly pressed for. *Sell-out* is the term inevitably used when one party to a dispute is seen to have betrayed his cause by yielding an important matter of principle. And so on. In one sense, such terms are now essential: they fulfil our need for means to structure and classify the complexity of conflicts falling short of war, or at least of total war, in a world where the pressures in the direction of solving disputes by peaceful means are immense. But we have to be continually on our guard against the artificial simplification

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and compartmentalization to which such jargon may habituate us, and also against an artificial dramatic heightening and polarization of attitude, by which fuzzy issues are made to appear clear-cut. The jargon becomes a substitute for independent judgement and thought.

Creativity (2): The Semantic 'Alertness' of Good Prose

I have mentioned the way in which the overexercise or exploitation of the prepackaging aspect of language can lead to a 'debasement of the linguistic currency'. Language therefore has within itself anti-creative pressures, and the function of the literary writer, in T. S. Eliot's words, is 'to purify the dialect of the tribe' – to restore the currency to its full value, and to resist the natural tendency to devaluation. Writers have always considered themselves the determined enemies of jargon and cliché, and a notable instance of this is the crusade George Orwell carried out against degenerate language, especially against those types of linguistic usage which have earned the disparaging titles 'journalese' and 'officialese'.

Orwell compared latter-day jargon with the simple concrete prose of the Bible, and in order to point a contrast, constructed a famous paraphrase of the following verse from Ecclesiastes:

> I returned and saw under the sun, that the race is not to the swift, nor the battle to the strong, neither yet the bread to the wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and chance happeneth to all.

This becomes, in Orwell's parody of 'modern English':

> Objective consideration of contemporary phenomena compels the conclusion that success or failure in competitive activities exhibits no tendency to be commensurate with innate capacity, but that a considerable element of the unpredictable must invariably be taken into account.

In his essay 'Politics and the English Language' from which this passage is taken, Orwell deplores the habit of what he calls 'gumming together long strips of words which have already been set in order by somebody else, and making the results presentable by sheer humbug'. Particular targets of his scorn were cliché phrases containing dying metaphors, like *toe the line*, *ride roughshod over*, *play a leading part in*, *militate against*, and *stand shoulder to shoulder with*; also vague grandiloquent phrases which can be replaced by a simple, more direct substitute, as *render inoperable* can be replaced by *spoil* or *ruin*, or *take into consideration* can be replaced by *consider*. The point about such phrases is that given

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one word, the other words follow almost as an automatic conditioned response: we no longer think about their individual meanings. The well-worn grooves of expressions are an outward sign of the unadventurous, mindless thought-grooves that underlie them.

Orwell saw this trend not just as an invitation to slovenly thought, but as an insidious influence on the intellectual, aesthetic, and moral life of the community: 'Language becomes ugly and inaccurate because our thoughts are foolish, but the slovenliness of our language makes it easier for us to have vicious thoughts.' Other modern commentators have taken an even more dramatic view of the modern debasement of language. Hayakawa (in *Language in Thought and Action*) talks of the 'Niagara of words' to which we are subjected daily through the mass media of television, radio, and newsprint. Because of the Babel of competing linguistic stimuli, we stop our ears, like people standing in a market-place where every stall-keeper is shouting at the top of his voice. This in turn leads to a coarser and more undiscriminating use of language. In an age when the whiteness of a wash seems to be treated as a criterion for admission to heaven on the Day of Judgement, how on earth are we to devise a terminology for the things that really matter?

In the face of this trivialization of language, some poets have retreated towards incoherence, and according to the fears of George Steiner, in *Language and Silence*, they may eventually even give up the attempt to communicate altogether. We do not, however, have to take up such an apocalyptic view of the matter: we can see the artist in words, like all people of linguistic conscience, as waging his struggle against the irresponsible use of language that often goes with the stereotyping of linguistic responses. Resistance to these pressures can be equated with the ideal of prose writing: the ideal that has been summed up as the search for the *mot juste*, or, in Pope's definition of wit, as 'what oft was thought, but ne'er so well expressed'.

It might be argued that this goal scarcely merits the term 'creative': at best it is '*re*creative', restoring language to its full semantic value. But in fact it may be related to a purely mathematical sense of 'linguistic creativity' which is familiar in modern linguistics. Our linguistic competence (as Chomsky has pointed out) is such that with a finite number of rules, we can generate and interpret an infinite number of sentences. Day by day we encounter and produce sentences we have never met in our whole life before. In its semantic aspect, this creativity of linguistic resource may be demonstrated by our ability to make up and make sense of configurations (e.g. the statement 'I ate one hundred and seventy-nine alligators for breakfast last Tuesday') which have virtually a nil probability of occurring in day-to-day communication. But in performance, this

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creative or innovative power inherent in our language competence is eroded by our tendency to rely on well-worn paths through the theoretically infinite array of possible English utterances. Thus not merely individual concepts, but configurations of concepts, become stereotyped; jargon invades syntax. The writer who resists this principle of least effort, by exploring new pathways and taking no meaning for granted, is in a real sense 'creative'.

Creativity (3): The 'Conceptual Fusion' of Poetry

Those types of creativity I have associated with the scientist and the prose-writer are by no means absent from poetry: poets have often aspired to the prose ideal, and have often extended their communicative resources by neologism. But there is a third and perhaps even more important notion of linguistic creativity which applies pre-eminently to poetry: one which amounts to actually breaking through the conceptual bonds with which language constrains us. If one of the major roles of language is to reduce experience to order, to 'prepackage' it for us, then the poet is the person who unties the string. It is in this context that the 'irrational' or 'counterlogical' character of poetry becomes explicable.

A very simple example of poetic irrationality is the Latin poet Catullus' famous paradox *Odi et amo*: 'I hate and I love'. The two-valued orientation of language makes us see love and hate as mutually exclusive categories: 'I love Lesbia' and 'I hate Lesbia' are looked upon as contradictory statements. But the poet, by presenting a seeming absurdity, shocks his reader into rearranging his categories; the stereotyped concept of love and hate as contrasting emotions is destroyed. A kind of conceptual fission and fusion takes place.

The quality just observed in poetic paradox is also present in metaphor – a more pervasive and important semantic feature of poetry. Again, the mechanism can be demonstrated by a very simple example. In an Anglo-Saxon poem, the expression *mere-hengest* ('sea-steed') is used as a metaphor for 'ship'. The connection between *steed* and *ship* lies in common connotations: both horses and ships convey men from one place to another; both are used (in the heroic context of the poem) for adventurous journeys and for warfare; both carry their riders with an up-and-down movement. By presenting the two concepts simultaneously, as superimposed images, the poet dissolves those linguistically crucial criteria which define their separateness: the fact that a horse is animate whereas a ship is not; and the fact that a horse moves over land, whereas a ship moves over water. The conceptual reorganization brought about in this metaphor may be diagrammed as follows (components in

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square brackets are regarded as connotative, or non-criterial features – see p. 12):

1. CATEGORIES IN THE LANGUAGE

Horse	*Ship*
1. animate	1. inanimate
2. on land	2. on sea
3.[for travelling on]	3. for travelling on
4.[with up-and-down movement]	4.[with up-and-down movement]
5.[for warfare, etc.]	5.[for warfare, etc.]

2. NEW CATEGORY BROUGHT ABOUT BY METAPHOR

Horse	*Ship*
1. animate	1. inanimate
2. on land	2. on sea
3.[for travelling on]	3. for travelling on
4.[with up-and-down movement]	4.[with up-and-down movement]
5.[for warfare, etc.]	5.[for warfare, etc.]

Through its power of realigning conceptual boundaries, metaphor can achieve a communicative effect which in a sense is 'beyond language'. It thus has a liberating effect, counteracting and reversing the child's progressive domination by the 'bony-structured' world of language as Simone de Beauvoir records it in her autobiography. As a chief instrument of the poet's imagination, metaphor is the means by which he takes his revenge on language for the 'stereotyped ideas' which have 'prevailed over the truth'. It is not surprising that children's language produces many instances of semantic 'mistakes' which strike the adult as poetic. Two cases in my own experience are a child's description of a viaduct as a *window-bridge*, and of the moon as *that shilling in the sky*, both based, significantly, on visual analogy. The *window-bridge* example is very similar to the *mere-hengest* of the Anglo-Saxon poet: the openings in a viaduct, when seen side on, are indeed very close in appearance and

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construction to the window-openings in the façade of a house. Using his generalizing ability, the child hits on physical appearance as a crucial criterion, at the expense of the criterion of function, which the language regards as more important. The difference between the two cases, of course, is that while the poet is familiar with the institutional categories and is aware of his departure from them, the child is not.

Summary and Conclusion

'Except for the immediate satisfaction of biological needs, man lives in a world not of things but of symbols' (*General Systems Theory*, p. 245). This statement by Ludwig von Bertalanffy is close enough to the truth to justify this chapter's concentration on the way language both determines and reflects our understanding of the world we live in.

Thinking of a language as providing its users with a system of conceptual categories, we have noted:

1. That the concepts vary from language to language, and are sometimes arbitrary in the sense that they impose a structure which is not necessarily inherent in the data of experience.
2. That it is a matter for debate how far concepts vary from language to language, and how far it is possible to postulate semantic universals common to all human language.
3. That although the conceptual system of a language predisposes its users towards certain distinctions rather than others, the extent to which man is 'enslaved' by his language in this respect is mitigated by various forces of creativity inherent in the system itself.

The notion of 'concept' itself has not been clarified, except by example. We shall look more carefully at this matter in Chapters 5 and 7; and meanwhile, we shall consider in the next chapter how meanings can be manipulated for social ends.

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4. Semantics and Society

In an ideal society of robots, each of whom had a preassigned role which he performed without demur, the only function of language would be to expound knowledge and pass information, so as to facilitate cooperation between members of society. We are only too aware that this is not the case in human society: all kinds of conflicts and pressures arise between one individual and another, or between one group and another, and language takes a major part in the way these interactions are played out. Although theoretically, and often in practice, conceptual meaning is the most important element in linguistic communication, its importance in some situations becomes reduced to almost nil; and more generally, the seven types of meaning listed on p. 23 vary a great deal in their contribution to the total communicative effect. My task in this chapter is to consider how our semantic competence is harnessed to various social needs, a task in which I cannot fail to take some note of the moral questions involved in the 'strategic semantics' of propaganda and loaded language generally.

Five Functions of Language

Before proceeding, let us look at the most important communicative functions of language.

Apart from the neutral *informational* function which everyone tends to assume is most important, language can have an *expressive* function; that is, it can be used to express its originator's feelings and attitudes – swear words and exclamations are the most obvious instances of this. Conceptual meaning is predominant in the informational use of language. But for the expressive function, affective meaning (what language communicates of the author's attitudes – see p. 15) is clearly all-important. A third function of language is the *directive* function whereby we aim to influence the behaviour or attitudes of others. The most straightforward instances of the directive function are commands and requests. This function of social control places emphasis on the receiver's end, rather than the originator's end of the message; but it

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resembles the expressive function in giving less importance, on the whole, to conceptual meaning than to other types of meaning, particularly affective and connotative meaning.

The expressive function has often been assumed to include the poetic use of language, but this view, I think, rests on an unacceptable, though popular, view of poetry as an effusion of the poet's emotions. Instead, I would prefer to recognize in poetry a separate *aesthetic* function, which can be defined as 'the use of language for the sake of the linguistic artefact itself, and for no ulterior purpose'. This aesthetic function, as we saw on pp. 37–8, can have at least as much to do with conceptual as with affective meaning. But the main semantic point about poetry is that it is language communicating 'at full stretch': all possible avenues of communication, all levels and types of meaning, are open to use. Both the poet and the reader bring a heightened sensitivity to meaning to bear on the act of communication.

Yet a further function of language, which the layman rarely takes seriously enough, is the so-called *phatic* function (after Malinowski's term 'phatic communion'), i.e. the function of keeping communication lines open, and keeping social relationships in good repair (in British culture, talking about the weather is a well-known example of this). The phatic function is at the furthest remove from the aesthetic function, in that here the communicative work done by language is at its lightest: it is not so much what one says, but the fact that one says it at all, that matters.

I do not claim that these five functions of language form an ideal classification: many other break-downs of function have been proposed, and (as we shall see) there is some difficulty particularly in separating the expressive and directive functions. In any case, allowance has to be made for the combined fulfilment of a number of different functions. Rarely is a piece of language *purely* informative, *purely* expressive, etc. Thus the remark 'I feel like a cup of coffee' may be read, in the right circumstances, as at once informational, expressive, and directive. But there is a particular interest in the present classification (which is based roughly on Jakobson, 1960): it can be neatly correlated with five essential features in any communicative situation, namely (1) *subject-matter*, (2) *originator* (i.e. speaker or writer), (3) *receiver* (i.e. listener or reader), (4) *the channel of communication* between them, and (5) the linguistic *message* itself. Each of the five functions I have mentioned can be identified with a special orientation of language to each of these factors in turn:

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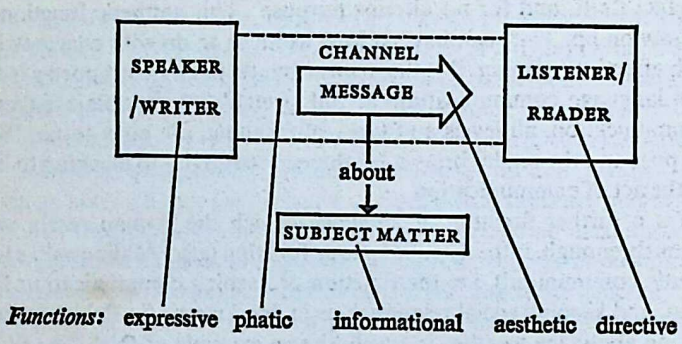
FUNCTION	ORIENTATION TOWARDS
informational:	subject-matter
expressive:	speaker/writer
directive:	listener/reader
phatic:	channel of communication
aesthetic:	message

or in diagram form:



The functions which most directly involve the social roles of language are the *expressive*, *directive*, and *phatic* functions; and it is to these that I shall devote the rest of the chapter. It may be wondered why the expressive function is included in this trio: after all, one can use expressive language in a social vacuum (Robinson Crusoe may have uttered an oath when he saw his clothes float away on the tide). But when we are considering the public expression of opinions and attitudes, it is very difficult to recognize a boundary between expressing one's own feelings, and influencing those of others. There is no way of telling, from inspecting the text, whether the position adopted by a writer is actually an expression of his own convictions, or whether it is assumed solely for the purposes of argument. At least in ideological and religious discussion, the two things usually go together. This is why, in the discussion that follows, I shall treat the expressive and directive functions together.

Conceptual versus Affective Meaning

Whenever language is 'loaded' towards or against a given set of attitudes, there is a danger of confusion, unless the addressee is able to distinguish between the conceptual and affective content of the message. As we noted in Chapter 2, there is an overlap between conceptual and affective meaning, in that attitudes may be overtly expressed by words

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denoting emotion ('I *love* you') or words whose primary content is evaluative ('He made an *excellent* speech, but the food was *dreadful*'). Here, one might say, an attitude parades itself openly to the world, and a listener is free to agree or disagree. But two dangers can arise if attitudes and emotions are conveyed by the associative meanings of words (pp. 18–19). One is that miscommunication and misunderstanding will result from the fact that, as we saw in Chapter 2, connotations, and associative meanings generally, tend to vary from one person to another. The second danger is that if the affective meaning of the message predominates over the conceptual meaning, the listener/reader will fail to make a proper appraisal of what is being said; in short, he will be 'taken in'. There is a sense in which conceptual meaning is the overt or face-value meaning of a text: it is to all appearances what the text is 'about'. By the same token, there is something covert, implicit and potentially insidious about affective meaning: if a writer appeals to our emotions, we cannot confront his appeal with 'I disagree with what you say', or 'I do not share your feelings' in the same way as we could if he had made his feelings and values explicit. We only have a certain feeling that we are being called upon to respond emotionally, a feeling that may be difficult to put into words, and which may be even more difficult to counteract by argument.

The words which differ in associative meaning most notoriously are words referring to social groupings: nationality words, for example. We will all be fairly well agreed that an *American* is a person born or brought up in the U.S.A., and who has U.S. nationality. But affective connotations may differ according to our experiences or acquired prejudices about Americans: one set of associations might be 'Americans are brash, boastful, materialistic', another 'Americans are open-minded, generous, fair, honest'. Terms referring to religious sects are equally likely to communicate different things. In Northern Ireland, the term *Catholic* is likely to have strong connotations (differing pointedly from one group to another) not generally felt by people living in England. For instance, it is possible that an Ulsterman would consider 'a loyal and patriotic Catholic' a contradiction in terms.

The danger seems to be greatest with words referring to political ideas or movements: *anarchism*, *communism*, *fascist*, *imperialism*, *Nazi*, *Powellite*, *racist*, *socialist*, etc. Here there seem to be such strong connotations on one side or the other that the dictionary sense of the word can be almost forgotten. A *liberal* according to the Concise Oxford Dictionary is one 'favourable to democratic reforms and [to the] abolition of privilege'. But in South Africa and quite widely in the U.S.A. *liberal* has had connotations of one who compromises with or encourages forces

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destructive to society – perhaps a dangerous political agitator. In contrast, someone on the left of the political spectrum in Great Britain will probably write off a liberal as an ineffectual moderate.

With a word like *democratic*, the connotative meaning seems to take over completely, so that supporters of two opposed political systems will claim that their own system is democratic and the other undemocratic. In such a state of affairs, it is doubtful whether 'The government of Liechtenstein is a democracy' tells us anything about the institution concerned, except that the speaker approves of it.

An unrestrained partisan user of language will tend to resort to what Hayakawa (in *Language in Thought and Action*) calls *snarl words* and *purr words*. Snarl words are words whose conceptual meaning becomes irrelevant because whoever is using them is simply capitalizing on their unfavourable connotations in order to give forceful expression to his own hostility. Terms for extreme or uncompromising political views, such as *communist* or *fascist*, are particularly prone to degenerate into snarl words. The opposite category of purr words has already been illustrated in the word *democratic*; other potential political purr words are *freedom*, *human rights*, *patriotic*, *fatherland*, *equality*.

Hayakawa gives a thought-provoking example of the kind of communicative disaster to which the variability of affective meaning can lead:

> A distinguished Negro sociologist tells of an incident in his adolescence when he was hitchhiking far from home in regions where negroes are hardly ever seen. He was befriended by an extremely kindly white couple who fed him and gave him a place to sleep in their home. However, they kept calling him 'little nigger' – a fact which upset him profoundly even while he was grateful for their kindness. He finally got up courage to ask the man not to call him by that 'insulting term'.
>
> 'Who's insultin' you, son?' said the man.
>
> 'You are, sir – that name you're always calling me.'
>
> 'What name?'
>
> 'Uh ... you know.'
>
> 'I ain't callin' you no names, son.'
>
> 'I mean your calling me "nigger".'
>
> 'Well, what's insultin' about that? You are a nigger, ain't you?'
>
> *Language in Thought and Action*, pp. 67–70.

What was the cause of this breakdown of understanding on such a tender point? The white man was apparently using the word without being conscious of its affective meaning: he was using *nigger* simply as a familiar synonym for *negro*. But for the negro, the term had powerful affective connotations, as a snarl word used by whites as a term of contempt for blacks. Hence for him it was (what most people indeed recognize it to be nowadays) a symbol of racial hatred and oppression.

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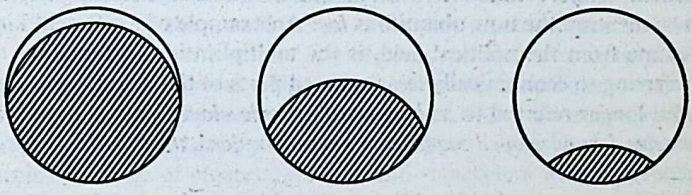
Nigger is a member of a class of denigratory racial, political, or nationality terms which have their own built-in affective bias: *Yanks, Wops, Japs, reds, pigs* are other examples. One may say that such terms (significantly, they usually occur in the plural) are ready-made for use as 'snarl words'.

The examples I have given suggest that the greatest dangers to intelligent communication come with cases where the affective meaning becomes a major part of, if not the whole of, the message. In the diagram below, if we let the large white circles represent the total meaning, and the smaller shaded areas the conceptual meaning, then the proportions of conceptual meaning might dwindle roughly as indicated, assuming a fairly typical use of the cited words:



typewriter (neutral, unemotive) | *America* (somewhat emotive) | *fascist* (snarl word)

'Associative Engineering': Euphemism and Image-Building

Words for which affective associations bulk large are by no means limited to areas such as race and politics. In private life, unpleasant associations are unavoidable in dealing with such subjects as death, disease, crime, and punishment, and it is on these subjects, as well as on the taboo-ridden subjects of sex and the excretive processes of the body, that *euphemism*, the linguistic equivalent of disinfectant, has an inevitable influence. Euphemism (Greek: 'wellspeaking') is the practice of referring to something offensive or indelicate in terms that make it sound more pleasant or becoming than it really is. The technique consists of replacing a word which has offensive connotations with another expression, which makes no overt reference to the unpleasant side of the subject, and may even be a positive misnomer (as when a hostess asks a guest whether he would like to 'wash his hands'). By this means, people find it possible to live with, and talk about, things that would otherwise shock or disturb them. *Disease* and *indisposition*, now established words for illness, were originally euphemisms, meaning 'lack of ease' and 'lack of ability to do things'. *Concentration camp* was also originally a euphemism ('a place where the non-combatants of a district

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are accommodated') applied to a camp where political prisoners and prisoners of war are kept – a place no better, and in many cases much worse, than a prison. And there are many more well-known examples.

A euphemism is in a way the opposite of a snarl word: instead of maximizing the unpleasant associations of a term, one tries to purge the subject of its damaging affective associations. But a euphemism is in the nature of things a palliative, not a cure. The unpleasant connotations of the word are, after all, not the fault of the word itself, but of what it refers to. So the euphemistic expression which replaces the original term soon gets tarred with the same brush. This is why, for example, there are so many euphemisms in English for *lavatory* (itself originally a euphemism meaning 'wash-place'): *privy*, *water-closet*, *toilet*, *cloakroom*, *restroom*, *comfort station* (this last favoured on American campgrounds), not to mention the now ubiquitous *loo*. An example of a different kind, this time from the political field, is the multiplication of terms we use in referring to economically less favoured parts of the world: such areas are no longer referred to as *backward* or *undeveloped*, but as *developing countries*, *less developed countries*, *emergent nations*, *third world countries*, etc.

It is to an example like this last, in which euphemism has a more conscious and persuasive character, that the expression 'associative engineering' seems appropriate. In a sense this is not euphemism at all. *Emergent nations* is not a nice label for something nasty: it is a label chosen with strategic tact, to pick out the optimistic and progressive aspect of the phenomenon labelled, and to play down the pessimistic aspect. The choice of term embodies a point of view, a political argument. A case where associations are more obviously chosen for political effect is *apartheid* ('separatehood'), considered as a euphemism for 'racial discrimination' or 'the colour bar'. It is an important point that the originators of the term would be unlikely to consider it a euphemism, or accept the offensiveness of what it refers to. 'Separatehood', they would say, does not have to involve racial inequality: and they would claim that the choice of a name involves not just a question of connotative meaning, but of conceptual meaning: to change 'apartheid' to 'racial discrimination' would be to talk about quite a different matter.

'Associative engineering' is not just a negative process of glossing over unwanted associations. Its positive side, the acquisition of pleasant associations, is equally important, and is well illustrated by the 'image-building' techniques of modern advertising. Manufacturers of men's cosmetics overcome the potential effeminate image of their product with aggressively masculine associations, in which the choice of product names like *Brut* plays a part. A desirable image of affluence and exclusive

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high-living can be obtained by straightforward word-painting ('White tie, red sash, sunburnt ladies and steel bands – a real Caribbean affair ...') or indirectly, by details of style:

From the most distinguished
tobacco house in the world
(from an advertisement for Dunhills)

Cigarettes by John Player, England

In the first of these two extracts from cigarette advertisements, the choice of the word *house* is the detail to which I wish to point. *House* might be considered by the uninitiated an unremarkable alternative for *firm* or *manufacturers*; but its associations are with gentlemanly businesses carried on by long-established family firms – a far cry from the factory conveyor-belt. In the second phrase, it is not so much the choice of words as the syntactic construction (that of *by* connecting two noun phrases) that suggests exclusiveness. This construction usually indicates some kind of artistic activity: *Landscape gardening by X*; *Floral arrangements by Y*; *Costumes by Z*; so here again there is an effort to dignify the somewhat tarnished image of cigarette-makers and -marketers with overtones of quality and distinction.

Again, taking 'associative engineering' in the more general sense of 'strategic choice of label with regard to improving associations', we find cases which, like *emergent nations*, involve an issue of conceptual meaning, of how one 'conceptualizes' an institution. A B.B.C. programme on 11 February 1969 reported a proposal for establishing a new category of ordained priest, who would do full-time work in a factory or office in addition to his pastoral duties. When the question arose of what this new type of cleric would be called, the B.B.C. interviewer made three suggestions: *auxiliary priests*, *part-time priests*, and *worker priests*. For reasons not difficult to appreciate, all of these were rejected: 'auxiliary priests' and 'part-time priests' sound too much like second-rate assistants, whereas 'worker priests' seems to allege that other priests do not work. Thus the arrival at a satisfactory title (*self-supporting priests*) was a matter more of discarding titles with unfortunate associations, and which would be likely to offend, rather than of finding a positively suitable name for the job. But I have given a strategic explanation: the church authorities, on the other hand, could give a conceptual explanation; e.g., that *part-time priest* is theologically inaccurate because a priest is a priest all the time, even when working in a factory; that *worker priest* is pleonastic in as much as all priests have work to do. Thus an issue of associations, of 'the right image', can easily be turned into an argument about dictionary meanings.

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'Conceptual Engineering'

Examples like *apartheid* show that propaganda does not just take the form of capitalizing on the affective meaning of a word at the expense of its conceptual meaning; more importantly, it becomes a matter of enlisting on one's own side the conceptual meaning of a word, so that the favourable associations can be claimed for oneself, or the bad associations used to stigmatize one's opponent. If the view is taken (as I have taken it here) that conceptual meaning is a more fundamental part of linguistic communication than associative meaning, then this is a case of 'the tail wagging the dog' – of language brought to a state where the associations of a word determine its choice, and where the conceptual meaning is reduced to an ancillary consequence, which has to be 'squared' in order for the use of the term to be legitimate. The situation reminds one of the principle of 'might is right': just as the first action of a successful rebellion is to legitimize its rule and illegitimize that of its predecessor in power, so many people turn to the dictionary (or the private dictionary stored in themselves) as a guarantee of verbal legality. Thus the principle of 'conceptual engineering' becomes part and parcel of 'associative engineering'.

Consider the word *violence*. Because of the irredeemably bad associations of *violence*, any public justification of political activities which lead to physical force or conflict must maintain the thesis that 'our actions are non-violent'. The *Guardian* reported on 2 September 1969 that a Mr O'Sullivan was arrested for trying to steal arms from a factory in Dagenham. When asked whether he was a 'militant', O'Sullivan replied that he did not know what the word meant, and went on: 'If it means using violence, I wouldn't agree. I would prefer to use the word *force*. Sometimes you must use force as a means to an end.' From this extract, it is difficult to tell whether O'Sullivan was purely indulging in associative engineering (using *force* roughly as a more pleasant synonym for *violence*, as one might prefer to call someone a *lady* rather than a *woman*); or whether he would have backed up his choice by dictionary arguments; e.g. that *violence* involves 'an extreme degree of force', 'aggressive force', or 'force which results in injury', etc.

The same sort of equivocation may be used to defend authority against harmful publicity. Bolinger (*Language – the Loaded Weapon*, Chapter 10) quotes the following case:

> In 1943, when General Dwight Eisenhower rebuked General George S. Patton for striking an enlisted man, an Army official in Algiers denied that General Patton had 'at any time been reprimanded by General Eisenhower'.

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The spokesman had denied something, but had he denied that a rebuke had been administered? Only when *rebuke* and *reprimand* are synonyms. But in the army, *reprimand* also has the specific meaning of a formal proceeding. So by denying the technical charge, the spokesman had managed both to speak the truth, and to give away nothing. This sort of manipulation is possible because the meanings of abstract words are to some extent indeterminate (see pp. 119–22). There is always room for disagreement on whether a given feature of meaning (such as the element of 'aggression' associated with *violence*) is a criterial feature, or simply a frequent connotation of the word.

Definition by partisan fiat can often go to the extent of reshaping the conceptual meaning of a word, so that it no longer matches the interpretation of most speakers of the language. After the kidnapping of a British diplomat by the Quebec Liberation Front, a spokesman for that organization referred to the kidnapping as a 'purely military action' against the 'British colonial government in Quebec'. The use of *colonial* here (in despite of the British North America Act of 1867) is one that I shall not speculate on; but *military* is a clearer case of conceptual engineering, in which the notion of open armed conflict is suppressed, but the moral implications of warfare are maintained: in a military situation, killing and the seizure of prisoners can be justified. The same communiqué referred to demands for the release of 'political prisoners', who in fact were members of the QLF jailed for such crimes as bomb-planting and blackmail. Here again, the valuable associations of *political prisoner* (overtones of secret police, imprisonment without trial, conviction merely for holding certain opinions, Amnesty International, etc.) were pressed into service against the Canadian authorities, at some cost to the normal understanding of what a political prisoner is. The QLF members in jail were probably 'political prisoners' in the sense that they had done what they had done for political reasons: but what they had done was 'criminal' in a legal sense, independently of their political convictions. Reduced to a semantic argument, the question at issue was: Does *political prisoner* mean 'a person imprisoned for holding certain political views' or 'a person imprisoned as a result of the illegal consequences of his political views'?

'Position'

Strategic semantics takes on a more elaborate form when it is a question not only of defining words, but of constructing a whole argument in favour of a given attitude. If one studies a piece of propaganda, one can usually find a structure analogous to a logical proof, except that the con-

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nections between one proposition and another, and even the underlying postulates, tend to be associative rather than conceptual. This quasi-logical network, which we may call the propagandist's *position*, is rather like a linguistic suit of armour protecting his attitudes. Polemics generally consists in trying to maintain one's own position intact whilst blasting holes in that of one's opponent.

For a simplified illustration of a position, we may return to the term *violence*, as considered earlier, and reconstruct the following 'proof' as the rationale underlying a person's linguistic behaviour:

(1) Being violent is bad.
(2) Being violent entails being aggressive.
(3) We are not aggressive.
(4) Therefore we are not violent.
(5) Therefore we are not bad.

A more extensive illustration will be provided by the following paragraph from a leaflet dropped on Czechoslovakia by the Warsaw Pact authorities at the time of their military take-over of the country, on 21 August 1968:

> Responding to the request for help received from leading Party and state leaders of Czechoslovakia who have remained faithful to *socialism*, we instructed our armed forces to go to the support of the *working class* and all the *people of Czechoslovakia* to defend their *socialist gains*, which are increasingly threatened by plots of domestic and foreign reactionary forces. [Italics added.]

The four expressions italicized in this extract are assumed, for the purpose of propaganda. to have strong favourable connotations. These expressions provide the 'associative postulates' which are the starting point for my analysis:

(1) Socialism***
(2) The working class***
(3) The people of Czechoslovakia***
(4) Socialist gains***

The three asterisks (***) are a mark of favourable affective meaning, and if one wishes, one may mentally translate them into conceptual terms by the phrase 'is/are good'. Thus 'Socialism***' can be rendered 'Socialism is good'. The object of the analysis is to arrive by deduction as many times as possible at the proposition 'We***'. The number of times this can be done is an indication of the strength of affective bias in the passage. Here are two specimen 'proofs':

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A. (1) Socialism*** (given)
(5) Therefore being faithful to socialism*** (from 1)
(6) Therefore the leading Party and state leaders of Czechoslovakia who have remained faithful to socialism*** (from 5)
(7) Therefore to give help to the leading Party and state leaders...*** (from 6)
(8) Therefore responding to a request for help from the leading Party and state leaders...*** (from 7)
(9) We have responded to a request for help from the leading Party and state leaders... (stated)
(10) *Therefore we**** (from 8 and 9)

B. (4) Socialist gains*** (given)
(11) Therefore to defend socialist gains*** (from 4)
(12) Our armed forces went to defend socialist gains (stated)
(13) Therefore, our armed forces*** (from 11 and 12)
(14) Therefore to instruct our armed forces to defend socialist gains*** (from 11 and 13)
(15) We instructed our armed forces to defend socialist gains (stated)
(16) *Therefore we**** (from 14 and 15)

'Proofs' similar to B could also be constructed starting from postulates (2) and (3). The analysis is only fragmentary, and I would not want to claim that it is anything more than a parody of a strict logical proof: nevertheless, it shows how the logical and conceptual content of language can be enlisted in support of the affective content. This may be called euphemistic propaganda: its aim is to show that what appears to be an invasion is actually nothing but a friendly intervention. Hence many of the values are positive values indirectly attached to the originator of the message. For propaganda which concentrates on the denigration of 'the enemy', a similar analysis could be undertaken, but the values represented by *** above would be 'bad' rather than 'good'.

In the Warsaw Pact example, there is a fairly direct relationship between the 'position' and what is actually asserted by the text; in other words, the argumentation is overt and undisguised. In other circumstances, the 'position' is conveyed in a more subtle and indirect manner, and one type of indirectness is exemplified in the following, from a report published by the John Birch Society in the U.S.A. in 1964:

> How are we reacting to the realities of our world? What do we think of the steady gain of Communism – of the millions killed, tortured and enslaved by this criminal conspiracy? Do we still laugh at Khrushchev's claim that our children will live under Communism? Do we shrug off Cuba? Will we shrug off Mexico? Are

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we concerned about the certain, documented, real influence Communism exercises in Washington? Do we watch with curiosity? Do we pull down the curtain on these disturbing thoughts? Do we draw down the warm covers of apathy around our necks?

What is interesting about this paragraph is that it overtly asserts nothing (it consists entirely of questions), and yet it presupposes or takes for granted a considerable number of propositions about Communism:

(1) Communism is gaining steadily.
(2) Communism is a criminal conspiracy.
(3) Millions have been killed by Communism.
(4) Millions have been tortured by Communism.
(5) Millions have been enslaved by Communism.
(6) Khrushchev has claimed that our children will live under Communism.
(7) Communism exercises certain influence in Washington.
(8) Communism exercises documented influence in Washington.
(9) Communism exercises real influence in Washington.

These statements are part of the writer's 'position', but they are presented obliquely, in the form of presuppositions contained within noun phrases. Presupposition is a relation which has been much studied in recent linguistics, and will be considered more carefully later (see p. 277). But for the present, we can simply note that as a propaganda tactic it not only has the advantage of indirectness, but is a way of presenting one's position to the reader as if it is a matter of common knowledge, which no one in his right mind would question.

I have presented 'conceptual engineering' and 'position building' chiefly from the directive point of view; but they could equally be considered from the expressive point of view, as ways in which a man's thought processes rationalize his attitudes. Like Orwell, we may well be worried as to whether bad habits of thinking and feeling and bad habits of language are part of the same vicious circle. Whether, for example, a tendency to argue from *ad hoc* definitions which suit one's case may not have causes and repercussions deeper down, in the degree to which people's feelings and prejudices are allowed to dominate intellectual processes. Similarly, looking at society as a whole, we may speculate that as more irresponsible propaganda gains currency, so it becomes more difficult to think clearly and in a disciplined way.

The Phatic Function

Having seen how the expressive and directive functions of language may reflect divisions and tensions between one social group and another, we

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turn now to the phatic function of language, the function of maintaining cohesion *within* social groups.

While phatic communion is important – perhaps far more important than we realize – for maintaining the equilibrium of society, it suffers from the major drawback of being, on the whole, dull and pedestrian. To show that our intentions are friendly, we indulge in 'small-talk', 'chit-chat', or 'sweet nothings'; for example, greetings, farewells, and routine polite questions such as 'How's the family?' and 'What happened to Spurs on Saturday then?'. The words are empty of meaning, in the sense that so long as a conversational hiatus is filled, what one says matters little. With strangers and casual acquaintances, it is advisable to have a repertoire of inoffensive remarks at your command, and on the whole, assertions must be uncontroversial. Hence the importance (in Great Britain) of remarks about the weather: if you say 'The nights are getting longer these days, aren't they', no one can possibly disagree with you. On the other hand, if you say as you pass a stranger 'Cold weather, isn't it', and he replies, 'No, actually the temperature today is higher than the seasonal average', you may well feel that he has mistaken the purpose of your remark, by treating it as *informational* rather than *phatic*.

Interesting explanations of phatic language have been put forward by experts in other fields than linguistics. The ethologist Desmond Morris, in *The Naked Ape*, notes that human small-talk has analogues in the animal world, notably in the mutual grooming customs of monkeys. He points out that this is one of the chief cooperative activities in which monkeys partake, and that whereas it has the practical effect of keeping the fur clean and clear of parasites, only an extension of this function to the social function of maintaining group cohesion can account for the inordinate amount of grooming in which monkeys indulge. Language in man is closely parallel to grooming in monkeys: it is an extremely important cooperative behaviour (it may have originated in the need for close cooperation in activities such as hunting); but the amount of talking that goes on can only be adequately explained by the secondary function of maintaining social contact.

A different account of phatic language as a substitute activity has been put forward by the social psychiatrist Eric Berne in *Games People Play* (1966). He argues that phatic communication (which he calls 'stroking') is an adult substitute for the unusual amount of handling and cuddling that a human baby requires, and normally receives, for his proper development. When he grows up, the human being does not lose this constant need for physical reassurance, but a great deal of the need is rechannelled towards reassurance administered by verbal rather than physical contact. Thus phatic language becomes characterized, in

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Berne's terms, as a mutual stroking ritual, in which a balance is maintained between the amount of pleasure administered and received.

Here is an example of what Berne calls 'an 8-stroke ritual' (the dialect is American English):

A: Hi!
B: Hi!
A: Warm enough forya?
B: Sure is. Looks like rain, though.
A: Well, take cara yourself.
B: I'll be seeing you.
A: So long.
B: So long.

This ritual is satisfactory, because each participant receives four strokes, and goes away well disposed to the other, having had the right amount of reassurance. When A and B first met, they may have had to partake in a more elaborate ritual; when they get to know one another well, they will probably make do with a more streamlined ritual of two strokes:

A: Hi!
B: Hi!

If B strokes too little or too much, the result is to upset the balance. An over-effusive reply will give A the feeling that B is looking for a way to take advantage of him; an under-effusive reply such as

A: Hi!
B: (no reply)

will leave A feeling anxious and unrewarded.

In a context such as this we can appreciate why silence can be so devastating to good social relations: it is not just a neutral response but can easily be interpreted as a hostile one. We might, indeed, equate the phatic function in general with the avoidance of unlooked-for silence. Particularly at social functions such as sherry parties, the conversational ball must be kept in the air at all costs, or else one seems to be breaking off diplomatic relations with one's interlocutor. This presents a problem: topics such as health and weather are soon exhausted, and further things to say must be invented. From this, it is easy to see how joke-telling, saying witty things, and general verbal foolery acquire importance quite out of proportion to their apparent merit.

Phatic language has its parallels in public affairs. Everyone is familiar with occasions when statesmen and politicians make public utterances

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which are elaborate ways of saying nothing. The cliché formula about 'full and frank talks on a wide range of subjects of mutual interest' has become almost *de rigueur* for announcing the outcome of political meetings whose confidentiality remains sacred. We might say such 'non-communiqués' are attempts to maintain communication channels (namely, to satisfy the expectation of the mass media and the public that *some* sort of statement should be made) in cases where the actual passing of information would bring to light differences which the negotiating parties are trying to pretend do not exist. This is in marked contrast to propaganda statements of a more militant kind, in which a political power is emphasizing the solidarity of its own group, and the struggle it is waging against hostile forces. In the one case there is reliance on neutral terms such as *problems*, *discussions*, and *mutual concern*, while in the other case there is a strong tendency towards two-valued thinking and a polarization of 'good' and 'bad' associations. Anyone who describes a political situation as a 'problem' is already seeing both sides of it.

On its most exalted and public level, the phatic function is found in ceremonial speeches by heads of state. The following is the opening of President Kennedy's inaugural address:

> Mr Chief Justice, President Eisenhower, Vice President Nixon, President Truman, reverend clergy, fellow citizens, we observe today not a victory of party, but a celebration of freedom – symbolizing an end, as well as a beginning – signifying renewal, as well as change. For I have sworn before you and Almighty God the same solemn oath our forebears prescribed nearly a century and three quarters ago.
>
> The world is very different now. For man holds in his mortal hands the power to abolish all forms of human poverty and all forms of human life. And yet the same revolutionary beliefs for which our forebears fought are still at issue around the globe – the belief that the rights of man come not from the generosity of the state, but from the hand of God.
>
> We dare not forget today that we are the heirs of that first revolution. Let the word go forth from this time and place, to friend and foe alike, that the torch has been passed to a new generation of Americans – born in this century, tempered by war, disciplined by a hard and bitter peace, proud of our ancient heritage – and unwilling to witness or permit the slow undoing of those human rights to which this Nation has always been committed, and to which we are committed today at home and around the world.

In this speech – a masterpiece of its genre – the informational function of language is reduced to a minimum, and although one might say that here the expressive and directive functions coalesce with the phatic, it is the non-controversial as well as the non-informative nature of the

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speech that needs to be stressed. If we regard the main audience of the speech as that majority of 'average Americans' who are emotionally committed to the institutions of their country, there is scarcely anything that can be disagreed with in the speech. This significant similarity between President Kennedy's address and a remark about the weather should not, of course, blind us to the emotive power of the speech, and to the use of political affective words (*rights of man, human rights*) which shows its affinity with political propaganda. But the function of the speech is not so much to change attitudes, as to reinforce or intensify them.

Language as a Substitute for Action?

We have seen how phatic language can in some senses be regarded as a substitute for physical activity ('stroking' or 'grooming'), and the same point might be made, perhaps more forcibly, with reference to the expressive and directive functions of language. A verbal insult is like the shaking of a fist, in that it stands for (or is a ritual symbol for) physical assault. A verbal attempt to change behaviour is an alternative to brute coercion. The language of militancy (using that significant word in its widest sense) is inescapably marked by a strong preference for military metaphors: *fight, struggle, victory, never surrender, campaign, crusade, close our ranks, defend our rights, make a stand.* One is reminded of the famous judgement on the United Nations that 'Jaw, jaw, is better than war, war'. People would find the history of degrading and acrimonious dispute in the United Nations easier to bear if they realized that it is necessary, if human beings are to live at peace and to survive, to have a substitute, in the form of verbal shakings of fists, for physical conflict.

The school of General Semantics (which has had continuing though moderate influence in the U.S.A. since Alfred Korzybski published *Science and Sanity* in 1933) is dedicated to the belief that misuse of language is a major cause of human conflict, and a major danger to the future of the human race. Hayakawa, the best-known popularizer of this school of thought, puts it as follows in the introduction to *Language in Thought and Action* (pp. 15–16):

> It will be the basic assumption of this book that widespread intraspecific cooperation through the use of language is the fundamental mechanism of human survival. A parallel assumption will be that when the use of language results, as it so often does, in the creation of aggravation of disagreements and conflicts, there is something linguistically wrong with the speaker, the listener, or both. Human fitness to survive means the ability to talk and write and listen and read

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in ways that increase the chances for you and fellow members of your species to survive together.

While I am in sympathy with Hayakawa's general drift, I believe that he, and other General Semanticists, make the mistake of assuming too readily that 'bad' language is a cause, rather than a symptom, of human conflict. This attitude can lead to an over-optimistic faith in the curative powers of semantics:

> No full fledged science [of semantics] has yet appeared, but it is obviously on the way. When it does appear, God help the orators, the spell-binders, the sooth-sayers, the propagandists, the Hitlers, the orthodox Marxists, the dogmatists, philosophers and theologians. The Wonderland in which they perform their enchantments will then be clearly seen for what it is.
>
> Stuart Chase, *The Tyranny of Words*, 1937, p. ix.

But if it were somehow found possible to ban the inflammatory use of language, one suspects that men would soon resort more readily to blows on the head; if the 'hidden persuaders' were suppressed, brute force would become the first rather than the last resort.

On the other hand, there does seem to be a sense in which an overemphasis on affective rather than conceptual meaning constitutes a perversion of language: the central and explicit aspect of meaning, that which man relies on to order and to convey to others his experience and understanding of the world, should not be irresponsibly pressed into the service of emotion and prejudice. The lesson to be learned is that only by educating ourselves and others to a 'semantic alertness' can we keep such dangers at bay.

Summary

According to the scheme presented at the outset of this chapter, language has at least five functions in society:

1. conveying information (*informational*)
2. expressing the speaker's or writer's feelings or attitudes (*expressive*)
3. directing or influencing the behaviour or attitudes of others (*directive*)
4. creating an artistic effect (*aesthetic*)
5. maintaining social bonds (*phatic*)

and many abuses or mistakes in communication involve the confusion of these different functions.

I have concentrated here especially on the directive and phatic functions of language, since they most clearly show language in the service of, or in interaction with, other forces in society. Studying these functions

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is also instructive in disposing of the fallacy that the main purpose of language is always to convey information, and the related fallacy that conceptual meaning is the most important semantic ingredient of all messages.

Directive language (in propaganda and loaded language generally) capitalizes on the affective and associative power of words, often with the result that conceptual meaning is subordinated to associative meaning, and is manipulated in its interests.

The phatic function, again, robs conceptual meaning of its central position in the communicative process: what information is conveyed may well be an insignificant matter in comparison with the fact that communication is being kept up at all. Not *what* is said, but *the fact that* it is said becomes crucial.

In spite of the undoubted power that language can have over the attitudes and behaviour of men, it must surely be a mistake to assume that in the social sphere, any more than in the psychological sphere, man is the slave, and language the tyrant. The relation between language and social organization or social control is a complex one of reciprocal dependence. This means that for the health of humanity, we should train ourselves to the same kind of responsible and critical scrutiny of linguistic communications as of social and political institutions.

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5. Is Semantics Scientific?

The first four chapters of this book have been largely unscientific, or – as I would prefer to say – prescientific. In them I have reported and proposed various ideas and classifications, various structurings of semantic phenomena, but none of these has really added up to a scientific theory. An example of prescientific thinking is the classification of language functions (informational, expressive, etc.) given on pp. 40–42. This classification provides no criteria by which the proposed division of functions could be confirmed or shown to be false. How, for example, could I show, using objective evidence, which of the five functions are applicable to a given utterance? There is no experiment which will separate them out, like a chemical analysis separating the ingredients of a compound. The most I can claim for such an analysis is that as a method of reducing the phenomena in question to some sort of order, it seems to fit reasonably careful observation, and to give some sort of intuitive satisfaction. Or we might take, as another example, my explanation of metaphor as a 'conceptual fusion' on pp. 37–8. This explanation entirely begs the question of what is a concept, or of what experimental evidence we might bring to bear to show that the conceptual reordering postulated there actually takes place when one describes a ship as a 'sea-steed'. How on earth can one justify in scientific terms talking about a 'concept' – something which, if it exists, is locked up in the brain away from observation – as an element of a scientific description at all?

I do not intend to apologize for this prescientific thinking. It is useful to have rough-and-ready ways of charting an imperfectly explored terrain – which is what semantics is. We need tentative ways of looking at and rendering orderly a range of phenomena so vast and perplexing. But there is a difference between saying 'this is a useful way of looking at it', and saying 'this is *the* way of looking at it, because this is the way it is'. Can semantics be regarded as a science, seeking out the truth about meaning as astronomy, for example, seeks out the truth about the universe?

My answer to this question will be a qualified 'Yes', but before justifying it, I need to dispose of the fallacy that science progresses by

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a process of discovery; that is, by deriving new knowledge from new observations, so that the quantity of human knowledge increases rather like a bucket filling up with water. In the present century, scientific developments (such as Einstein's theory of relativity) and philosophy of science have presented a very different picture of scientific method, one which was formulated by Karl Popper (*Objective Knowledge*, p. 297) as follows:

$$P_1 \rightarrow TT \rightarrow EE \rightarrow P_2 \ldots$$

(where P_1 = problem; TT = tentative theory; EE = error elimination; P_2 = new problems; the whole chain of procedures being cyclic). In this formula, there is no expectation that we shall ever arrive at 'the truth', but rather, the method of science ensures better and better approximations to truth, by eliminating errors in theories – that is, by falsifying hypotheses. We can never prove a theory true, but we can (if it makes claims which can be tested) prove it false. Thus even the most well-founded theories are tentative or provisional; they are (to use another formulation of Popper's) 'bold conjectures'.

The difference between science and non-science, in this view, is that a scientific theory makes predictions which are FALSIFIABLE: that is, we can derive from it statements describing observable events ('BASIC STATEMENTS' or 'OBSERVATION STATEMENTS'), the truth of which can, at least in principle, be tested. An important prerequisite is, obviously, that a theory should be as EXPLICIT as possible in its claims about reality: otherwise we shall not know how to test it. But there is no requirement that *everything* claimed by a theory is directly susceptible to empirical test: few physicists today would agree with Ernst Mach in refusing to accept the existence of submicroscopic atoms and particles because they cannot be observed.

There are further desiderata for a scientific theory. It should be COMPLETE in the sense of accounting for *all* the data at one's disposal. It should be SIMPLER than other theories known to account for the same data. It should also be STRONGER than competing theories in the sense that it should limit its truth-claims, as far as possible, to accounting for known data: in this way it will be less easily falsifiable. Finally, it should be testable by OBJECTIVE (or rather INTERSUBJECTIVE) means, in the sense that the basic statements derived from it may be independently checked by different observers. All these requirements, and the trade-off relations between them, are problematic, and particularly so for what we may provisionally call the 'human sciences': psychology, sociology, anthropology and linguistics. Theories accounting for what human beings are like and what they can do have to be inordinately

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complex, and the relation between such theories and the observations they are meant to account for may be extremely indirect. In any case (and this is particularly so with semantics) it is often unclear what is the domain of the theory, and hence what set of observations it should try to account for. Because of these and other problems, probably the most that we can say for semantics is that it is a 'would-be science'.

To have reached the stage of being a would-be science is no trivial achievement, as it means that semantics adopts the general method of inquiry common to natural sciences and to other types of empirical investigation: the so-called HYPOTHETICO-DEDUCTIVE method. But before pursuing this topic further, we shall find it instructive to consider the failure of earlier attempts to make semantics scientific.

The Contextual View of Meaning

It was during the 1920s and 1930s that linguistics first began to give serious consideration to its scientific credentials. We may say that during this period (and the following two decades) linguists tended to give credence to the 'bucket theory of knowledge', and this meant giving precedence to the OBSERVATIONAL aspect of scientific investigation; an approach which manifested itself in the attempt to base meaning on context.

CONTEXTUALISM, as I shall call this tendency, has a superficial attractiveness for anyone who aspires to the ideal of scientific objectivity. If meaning is discussed in terms of ideas, concepts, or internal mental states, it remains beyond the scope of scientific observation; so instead, goes the argument, we should study meaning in terms of situation, use, context – outward and observable correlates of language behaviour. As J. R. Firth, the leading British linguist of the period, put it in 1930:

> If we regard language as 'expressive' or 'communicative' we imply that it is an instrument of inner mental states. And as we know so little of inner mental states, even by the most careful introspection, the language problem becomes more mysterious the more we try to explain it by referring it to inner mental happenings which are not observable. By regarding words as acts, events, habits, we limit our inquiry to what is objective in the group life of our fellows.
>
> *Speech*, repr. in *The Tongues of Men and Speech*, 1964, p. 173.

Firth had been influenced in this view by the great Polish-born anthropologist B. Malinowski, who, in his study of the part played by language in primitive societies (see Malinowski 1923, 1935), had found it appropriate to treat language as 'a mode of action, not an instrument of reflection'. 'Language in action' and 'Meaning as use' might be taken

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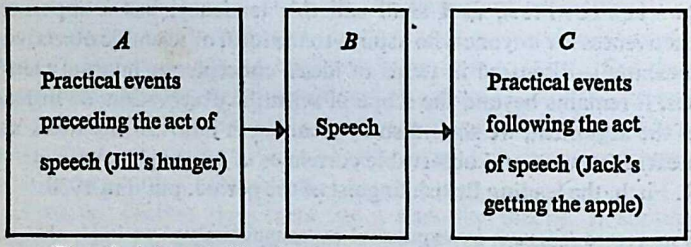
as twin slogans for this school of thought. Certainly at one time, not too long ago, the statement of the philosopher Wittgenstein, that 'For a large class of cases ... the meaning of a word is its use in the language' was the most quoted, though perhaps not the most studied, of pronouncements on meaning. Similarly the simple 'language games' invented by Wittgenstein, to illustrate how in a limited context the meaning of a word can be understood simply from observing what is going on, seemed to linguists an object-lesson in how meaning should be studied.

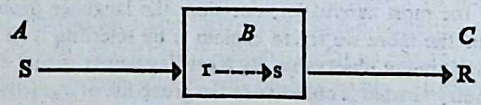
Not only anthropology and philosophy, but a third discipline relating to semantics – psychology – appeared to support the contextualist viewpoint. Bloomfield drew on behaviourist psychology when he defined the meaning of a linguistic form as 'the situation in which the speaker utters it, and the response which it calls forth in the hearer'. By way of illustration (in Chapter 2 of *Language*) he described a simple situation in which that immortal couple, Jack and Jill, are walking down a lane:

> Jill is hungry. She sees an apple in a tree. She makes a noise with her larynx, tongue, and lips. Jack vaults the fence, climbs the tree, takes the apple, brings it to Jill, and places it in her hand. Jill eats the apple.
>
> *Language*, p. 22.

Of this situation Bloomfield distinguished three components:



These he interpreted in stimulus-and-response terms as follows:



(where s and r stand for verbal stimulus/response, and S and R for external stimulus/response).

Thus, in Bloomfield's eyes, language came to be regarded as basically a remote control system, by which a stimulus to one organism of the human species can result in a response in another organism.

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Another behaviourist approach to meaning was that of the American philosopher Charles Morris, whose ideas gained some currency among linguists in the forties and fifties. Morris recognized five basic components in any communicative situation:

a *sign*
an *interpreter*: an organism for which something is a sign
an *interpretant*: the interpreter's reaction to the sign
a *denotatum*: the something else to which the interpretant is a partial response (or in other words, the *referent*)
a *significatum*: those properties which identify a denotatum as being a denotatum of the sign (or in other words the *meaning*).

These are my own simplified explanations of Morris's terminology: something of the forbiddingly technical flavour of his own explanations can be sampled from this definition of the *sign*:

> Roughly: something that directs behavior with respect to something that is not at the moment a stimulus. More accurately: If A is a preparatory-stimulus that, in the absence of stimulus-objects initiating response-sequences of a certain behavior-family, causes in some organism a disposition to respond by response-sequences of this behavior-family, then A is a sign.

A simple sign situation of the kind that Morris deals with is the following. A dog is kept in a pen for the purpose of experiments. When food is placed for him in a certain place A, a buzzer sounds. After a while, the dog learns to associate the buzzer (which we may call S_1) with the food, so that when he hears it, he responds to some extent as if he had actually seen or smelt the food: that is, he moves over to A, where the food is placed. The buzzer sound S_1 is now a *sign*; the dog is the *interpreter*; movement towards A is the *interpretant*; the food placed at A (say, a bone) is the *denotatum*; the set of conditions (e.g. the qualities of being edible, tasty, nourishing) which make the bone a denotatum of S_1 constitute the *significatum* of the sign. We can see that the buzzer, in this situation, is analogous to a simple linguistic message, such as 'Grub up!' or 'Dinner time!'.

It is noticeable that the situations to which Malinowski, Bloomfield, and Morris naturally turn when they want to illustrate the contextualist thesis are all 'primitive' in one sense or another. In fact, contextualism in its crudest form (which we may summarize in the formula 'MEANING = OBSERVABLE CONTEXT') is incapable of dealing with any but the simplest and most unsophisticated cases of language use. In most circumstances in which linguistic communication occurs (say, telling a

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story, giving a lecture, gossiping about the neighbours, reading a news bulletin) observing the situation in which speaker and listener find themselves will tell us little, if anything, about the meaning of the message. Manifest inadequacies of this simple-minded contextualism are that speech may take place in the absence of the objects being talked about (what Bloomfield calls 'displaced speech'), that anyway many linguistic forms, such as words referring to states of mind, have no observable correlate, and that some linguistic forms have no correlate in the contemporary real world at all (e.g. *dragon, gladiator* A.D. *1990*).

In practice, therefore, linguists like Bloomfield espoused a weaker form of contextualism, in which the relation between context and meaning was more indirect, and which may be expressed in a formula like 'MEANING IS ULTIMATELY DERIVABLE FROM OBSERVABLE CONTEXT' or 'MEANING IS ULTIMATELY REDUCIBLE TO OBSERVABLE CONTEXT'. One way of modifying crude contextualism in this direction is to say that whereas meanings are *learned* by reference to context, their use may be free of context from then on. In effect, this means accepting the internal mental record of previous contexts as equivalent to those contexts themselves. More generally, the requirement that context should be observable may be relaxed, so that the attitudes of speaker and hearer, their previous mental histories, and so on, may be taken into account. Even broad abstractions such as 'British culture' have been accepted as part of the contextual description of an utterance. An additional extension of the contextualist thesis is to bring in *linguistic* context as well as (or instead of) non-linguistic context. Thus the probability of one word's co-occurrence or collocation with another (see p. 17) comes to be regarded as part of its 'meaning'.

Although this weaker form of contextualism has the advantage of approximating 'context' more nearly to what we usually understand by 'meaning', it has the corresponding disadvantage of rendering 'context' a much more abstract notion, so that it is more and more difficult to relate it to observation. Thus the goal of scientific objectivity, which provided the reason for adopting a contextualist position in the first place, recedes into oblivion. Worse, one may arrive at a kind of mongrel 'mentalist contextualism', by which the investigator claims to be correlating language with situation, but is in effect relating it to those 'inner mental states' reprehended by Firth.

An additional, purely logical, objection to contextualism is that it falls prey to the 'linguistic boot-straps fallacy' we met earlier in Chapter 1 (p. 4). By this I mean that the semanticist 'tries to lift himself by his own boot-straps' in the sense that he describes meaning in terms of language, thereby begging the question of how the meaning of the

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language he has used to describe meaning is itself to be described. An illustration of this fallacy may be taken from Morris's book *Signs, Language and Behavior* at a point (p. 156) where he is elaborating his dog-and-buzzer situation in order to account behaviourally for the meaning of formators, or logical elements of meaning such as 'and' and 'or':

> Suppose that S_1, S_2, and S_3 are signals to the dog of food in three different places, so that the dog, when hungry, seeks food in the place signified by the stimulus presented to it. Now if a new stimulus, S_6, be combined always with two of these other stimuli (as in, say, S_1, S_6, S_2), and if the dog then, without preference, seeks food at one of the two places signified and at the other place if and only if food is not secured at the place first approached, then S_6 would be a stimulus which has much in common with the exclusive 'or' of English ('at least one but not both').

What stares us in the face is that Morris, in giving a behavioural explanation, provides a far more complicated communicative object for us to study and explain than the original sign-sequence. His description of what 'exclusive *or*' means presupposes that we already know the meaning of such logical elements as *if*, *if and only if*, and *not*. The whole exercise amounts to the same thing as equating two logical formulae:

> X exclusive-*or* Y = (X if and only if *not*-Y) and (Y if and only if *not*-X).

The best that can be said for such contextualist explanations therefore is that they correlate two sets of linguistic expressions (in itself not a futile procedure – but a different procedure from that which is apparently aimed at). The only way out of this circularity would be to resort to non-verbal characterizations of context (e.g. pointing to objects instead of describing them in language); in which case semantics would attain the absurd status of the science of the ineffable.

In view of these defects, it is not surprising that in practice contextual semantics made little progress. Although there were many programmatic formulations and anecdotal illustrations of how the job might be done, virtually no systematic accounts of particular meanings in particular languages were produced. One achievement was to direct attention to the previously neglected areas of social and collocative meaning (pp. 14, 16). But in general contextualism had the opposite effect to that intended: it took the mind of the investigator away from, rather than towards, the exact study of data.

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How do we deal with Context?

Recent work in semantics has returned to the 'mentalism' against which Firth, Bloomfield, and their contemporaries reacted. One might claim that this is simply a recognition of common-sense reality: meaning actually *is* a mental phenomenon, and it is useless to try to pretend otherwise. Later in the chapter we shall pursue this further, and consider in what sense there can be a 'science' of mental phenomena. But first, let us at least acknowledge that there is some degree of common sense on the side of the contextualists – that context is an undeniably important factor in communication; and let us consider how this semantic role of context can be allowed for within a theory based on conceptual meaning.

Ordinary observation supports the importance of context in a number of ways. We have all experienced the bewilderment which results from lack of contextual information: for example, when we tune in to the twelfth instalment of a twelve-part serial.

In addition, we may recall familiar examples where the contextual predictability of meaning enables us to understand such skeleton messages as:

(1) SPLASH! UPSIDE DOWN
(2) IT'S OFF!
(3) STICK IT ON FOULNESS
(4) JANET! DONKEYS!

Without the clues of the original context, the present reader will find it difficult to make any sense of any of these. They are (1) a news headline announcing the splash-down of Apollo 13 in October 1970; (2) another newspaper headline announcing the termination of the British Dock strike in July 1970; (3) a car sticker seen at the time of the controversy over the placing of London's third airport (1971) (Foulness, of course, is a place and not a state of filth); (4) a celebrated recurrent remark by the hero's aunt Betsey Trotwood in Dickens's *David Copperfield* (the remark was an order to her maid to carry out a routine task of driving donkeys off the grass). In each of the four cases, the originator of the message has assumed an unusual amount about what background knowledge is in the mind of the reader.

More widely, we may say that specification of context (whether linguistic or non-linguistic) has the effect of narrowing down the communicative possibilities of the message as it exists in abstraction from context. This particularization of meaning can take place in at least the following ways:

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(A) Context eliminates certain ambiguities or multiple meanings in the message (e.g. lets us know that *page* in a given instance means a boy attendant rather than a piece of paper).

(B) Context indicates the referents of certain types of word we call DEICTIC (*this, that, here, there, now, then,* etc.), and of other expressions of definite meaning such as *John, I, you, he, it, the man.*

(C) Context supplies information which the speaker/writer has omitted through ellipsis (e.g. we are able to appreciate that *Janet! Donkeys!* means something like 'Janet! Drive those donkeys away!' rather than 'Janet! Bring those donkeys here!', or any other of the indefinitely many theoretical possibilities).

The first of these roles, the so-called DISAMBIGUATING role of context, may be illustrated by the simple sentence *Shall I put this on?* It makes a great difference to the understanding of this sentence to know whether the speaker is holding up (1) a portable radio; (2) a sweater; or (3) a lump of wood. The difference does not simply lie in the changing referent of *this*, but in the sense one attaches to *put ... on*:

(1) = 'switch X on'
(2) = 'don X', i.e. 'put X on oneself'
(3) = 'place X on top of (something else, such as a fire)'.

The same point could be made if we replaced *this* in the sentence by the noun phrases (1) *the portable radio*, (2) *the sweater*, or (3) *the lump of wood*, except that it would be made in a slightly different way: we would not be talking about the *non-linguistic* environment of the whole sentence, but about the *linguistic* environment of the phrase *put ... on*:

(1a) Shall I put the portable radio on?
(2a) Shall I put the sweater on?
(3a) Shall I put the lump of wood on?

But the way in which context operates on meaning is not so straightforward as so far suggested. In fact, 'disambiguation' is not only an ungainly, but a misleading term, as the effect of context is to attach a certain *probability* to each sense (the complete ruling-out of a sense being the limiting case of *nil* probability). Sentence (2a), for example, allows not only the 'wearing' sense of *put ... on* (sense 2), but the sense of 'placing on top of something else', such as a pile of clothing (sense 3). The former alternative tends to occur to us because it is far more probable than the latter; but the latter is far from impossible. Once we attune ourselves to these things, we realize that there are far more potential ambiguities than appear at first glance. Thus sense (2) of *put ... on* could apply in sentence (1a) in the unlikely case of a radio being treated as

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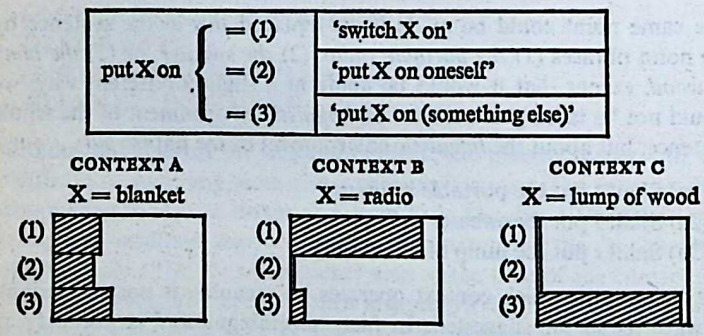
something to wear (if, for instance, a person were to balance it on his head as a hat). What is more, sentence (2a) could have all three meanings: meaning (1) could be read into it if someone invented an electric sweater (on the analogy of an electric blanket). Contextualists are inclined to play down ambiguities of this kind, arguing that they would not arise if we were able to supply a more detailed specification of the context. But on the other hand, it is everybody's experience that ambiguities do occur and can cause mistakes of communication. A plausible example would be an instruction shouted to someone upstairs to *put the electric blanket on*; the intended meaning might be that he should place it on the bed; the actual interpretation could be that he should switch the current on.

Within a semantic approach based on conceptual meaning, all these observations suggest that meaning-in-context should be regarded as a narrowing down, or probabilistic weighting, of the list of potential meanings available to the user of the language. For example, if we suppose that the dictionary entry for *put ... on* provides us with just the three meanings already listed, then the dictionary senses, as represented in the top box of the following diagram, will be modified in context roughly as indicated in the three lower boxes:



The shaded parts of each rectangle represent my rough estimate of the relative probabilities of the three meanings.

The contextualist position is thus reversed. Instead of seeing total meaning as an aggregate derived from contexts, we see the contextual meanings as dependent on a previously established set of potential meanings. This does not conflict with what we know about how context contributes to the learning of meaning. It means, rather, that learning meaning through context is seen as a process of inductive approximation to the semantic categories that the linguistic community operates with,

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as described on pp. 27–30. Moreover, learning through context is seen as only part of the process of learning meaning: verbal explanation (definition, etc.), which in the later stages of language learning plays a role at least as important as context, can be given its full weight.

This view of context fits the distinction between linguistic COMPETENCE and linguistic PERFORMANCE alluded to on p. 5. In terms of this distinction (which has been drawn for language in general), it is part of our semantic COMPETENCE (what we know about meaning as speakers of English) to be able to interpret *put ... on* in the three dictionary senses discussed above. But it is by virtue of linguistic performance (the practical use we make of that knowledge) that we infer which meaning is most likely, given our background knowledge of the context. 'Background knowledge' can include here anything we happen to know about the state of the universe at the time that the linguistic expression under consideration was uttered. For example, it is relevant to interpretation (1) of sentence (2a) *Shall I put the sweater on?* to know whether anyone has yet invented a sweater warmed by an electric current. In this light, it is evident that the study of interpretation in context can involve that vast encyclopedic knowledge of the universe which it has already been suggested (pp. 7, 13) cannot be practically included in the study of semantics. The study of meaning-in-context is logically subsequent to the study of semantic competence, rather than the other way around. In a sense, 'real world' knowledge is a kind of competence – part of a general 'communicative competence' – but insofar as they are kept apart in theory, linguistic knowledge and 'real world' knowledge mingle together only on the level of performance.

Even so, we cannot dismiss context so lightly, for there are respects in which the abstraction of 'semantic competence' from 'contextual performance' is difficult to maintain. Factors of situation can cause conceptual meanings to converge and diverge in a way which calls for systematic treatment. For example, although 'willingness' and 'ability' are in general distinct concepts, they converge *pragmatically* in the conventional reply to an invitation, as the following prepaid reply form shows:

> *I am willing
> ——————— to accept the invitation
> *I am unable
> *Delete as appropriate
> Date..... Signed.....

Normally *unwilling* would be treated as the antonym of *willing*, but in

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this context, a pragmatic opposition, cutting across conceptual boundaries, is set up for reasons of politeness (actually, in order to anticipate politeness on the part of the person replying). Such facts cannot be explained by a semantic theory which ignores the relation between addresser and addressee in the situations in which language is used. But the use of the term 'pragmatic' above introduces a distinction which is widely recognized between semantics – the study of meaning *per se* – and PRAGMATICS – the study of how meanings get interpreted in communicative situations, in relation to the roles of the speaker and the hearer. The question of distinguishing semantics from pragmatics will be considered in Chapter 16. If we assume that such a distinction can be maintained (as many linguists do), then we can accept, as a working basis for inquiry, that semantics can disregard factors of contextual variability.

Mentalism and 'Intuition'

This brings us to the question: 'What respectable alternatives are there to contextualism?' The reaction to this of most modern linguists, led by Chomsky, has been an unashamed return to the 'mentalism' from which the contextualists tried to escape. The notion that the primary function of language is 'the communication of ideas' has become acceptable again. What is more, it has been assumed, as a working basis for linguistic inquiry, that the data we need about language can be supplied by direct resort to intuition. How have modern linguists dared to take up this stance, which seems not only at variance with contextualist thinking, but in defiance of the whole empirical tradition of science? Chomsky's answer is a rhetorical shrug of the shoulders: in reply to the question 'How do we know that such-and-such a sentence is grammatical, that such-and-such an expression is synonymous with such-and-such another expression, etc.', he says: 'There is no very satisfying answer to this question; data of this sort are simply what constitute the subject matter of linguistic theory. We neglect such data at the cost of destroying the subject.' (*Current Issues in Linguistic Theory*, p. 79.) He even argues that the relation between competence and operationally derived data (e.g. results of tests in which speakers have to judge the acceptability of sentences) is so indirect that 'operational tests ... must meet the condition of correspondence to introspective judgement' (p. 80). He justifies this apparently cavalier attitude by claiming (p. 81) that ...

> ... at the present stage of the study of language, it seems rather obvious that the attempt to gain some insight into the range of data we now have is likely

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to be far more fruitful than the attempt to make this data more firm, e.g., by tests of synonymy, grammaticality, and the like. Operational criteria for these notions, were they available and correct, might soothe the scientific conscience; but how, in fact, would they advance our understanding of the nature of language ...?

In other words, the linguist has already plenty to do in explaining what is common knowledge about language.

To a surprising extent, argument in semantics does indeed seem to go forward on a generally agreed basis of common data: investigators frequently agree as to which sentences are synonymous, which sentences are ambiguous, which sentences are ill-formed or absurd, and so on. Intuitions are consistent enough, then, to form the basis of satisfactory argumentation. Differences of intuition amongst speakers of a language are often treated as relatively unimportant: they may indicate a certain difference of 'dialect' between one speaker and another, but are not likely to affect crucially the argument for or against a particular theory or descriptive account.

In the words of the philosopher W. V. Quine, the ultimate contextualist objection to mentalism was that it ...

... engenders an illusion of having explained something. And the illusion is increased by the fact that things wind up in a vague enough state to insure a certain stability, or freedom from further progress. ('The Problem of Meaning in Linguistics', *From a Logical Point of View*, p. 47)

But by an extraordinary irony the opposite seems to be the case: mentalism has brought progress, while contextualism led precisely to the illusion described by Quine.

Semantic Data

Meanings are mental phenomena, and a mentalist theory of meaning merely acknowledges this obvious fact. But how does such a theory fit into the paradigm of scientific investigation? On the face of it, evidence of intuition (introspective access to one's linguistic knowledge) is subjective and therefore fallible: I can, for example, lie about my introspections, and no one can check my veracity. But remembering that *inter*subjectivity is the requirement placed on scientific observations, we may look at intuitions in a more favourable light. Linguistic knowledge, it may be claimed, is public knowledge, because speakers of a language, by virtue of sharing that language, also share the same implicit linguistic knowledge. In this sense, although my introspections are private, the data which I obtain through introspection are public: they may be confirmed by the introspections of other people.

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This does not mean that intuitions are unproblematic. Firstly, a speaker's report of his intuition may be vague or unclear. Secondly, it may fail to agree with the reports of other speakers for at least two different reasons: it may be that his version of the language (his dialect) is different from that of others; or he may simply be misrepresenting the facts of his language – it is a well-known temptation to make the 'facts' suit one's theory. It is difficult to see how these cases can be distinguished. Moreover, if a linguist is investigating a language which is not his own, the problem arises of how to elicit intuitions from native speakers. How can judgements be elicited which faithfully represent the speaker's intuitions, and which are verbalized in a form which is appropriate to one's theory?

Since intuitive evidence is fallible or unclear, it is important to ask what other types of evidence could be found regarding the mental phenomena we call meanings. Two alternatives are (i) behavioural evidence and (ii) physiological evidence; but both unfortunately are of limited value.

Sources of behavioural evidence are (a) corpuses of the spoken and written language that people actually produce; (b) informant tests designed to elicit from speakers their explicit judgements about pieces of language; and (c) psychological tests in which subjects perform other tasks on a linguistic input. Such evidence is, of course, by its very nature evidence about performance rather than competence, and can only be used to test semantic hypotheses on the assumption that all irrelevant factors influencing performance can be discounted. For example, it might be predicted that contradictory and other nonsensical utterances would just not occur in corpuses of everyday language. But it is well known that tautologies and contradictions do occur, usually with some special interpretation involving factors such as metaphor, irony, and hyperbole: *If you must go, you must go*; *He's his father's son*; *All reactionaries are paper tigers*; *I need something to quench my hunger*; etc. In practice, all behavioural evidence is indirect and probabilistic. It can show a semantic theory to be more or less plausible, but it cannot categorically disconfirm it. This point can be illustrated with reference to psychological tests. Over many years, word-association tests carried out by psychologists have yielded much detailed information (see Postman and Keppel, 1970) which tends to confirm relations of synonymy, antonymy, hyponymy, etc. between words (see pp. 94–5). Other experimenters have used statistical techniques to plot relationships of meaning on the basis of people's judgements of semantic similarity between words (Fillenbaum and Rapoport, 1971). Such experiments are advantageous in that they tend to complement the evidence of intuition, and provide a wealth of data

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for which semantics must provide some explanation. But it is difficult to see how they can absolutely falsify the predictions of a semantic theory. Similar considerations apply to semantic informant tests, to which I shall turn later in the chapter.

As for physiological evidence: this is also indirect. Systematic studies of aphasia (various types of language disorder resulting from brain damage) are a source of information about the cerebral organization of language, including the organization of semantic competence (see Luria, 1976). But the data from this source pose in themselves a complex problem of interpretation. Such support as these studies can give to semantics is at present fragmentary and uncertain.

Thus, although semantics is answerable indirectly to other kinds of data, in practice intuition is the first resort and often the last resort of the semantic investigator looking for evidence to back up his theories.

Basic Statements: the Control of Intuition

What is needed, if semantics is to be as securely based as possible, is firstly a control of the way in which intuition is resorted to, and secondly, an exploration of the means by which intuitive data can be more securely backed up by other kinds of evidence.

Many semanticists today assume that the main purpose of semantics is to explain that primary, conceptual aspect of meaning called 'conceptual' or 'logical' meaning, and that in particular we have to account for certain semantic categories and relationships which apply to sentences: synonymy, entailment, contradiction, semantic anomaly, etc. These may be incorporated into a set of statements which may be taken to be intuitively 'given'. They can be called BASIC STATEMENTS (in the sense referred to on p. 60) because semantics has to explain them, by constructing theories from which they can be deduced. A theory will be falsified, in these terms, if it can be shown that, according to the data of intuition, what it claims to be a basic statement is untrue. In this way, (a) intuition is explicitly controlled by limiting its use to judgements about basic statements, and (b) semantics is given a clear goal: that of accounting for basic statements by the hypothetico-deductive method of science.

At this stage, I shall simply give illustrations of basic statements, leaving their definition till later (*X* and *Y* in the formulae are propositions rather than sentences – on this distinction, see p. 75).

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Types of Basic Statement

1. *X* is synonymous with *Y* (e.g. 'I am an orphan' is synonymous with 'I am a child and have no father or mother')*
2. *X* entails *Y* (e.g. 'I am an orphan' entails 'I have no father')
3. *X* is inconsistent with *Y* (e.g. 'I am an orphan' is inconsistent with 'I have a father')
4. *X* is a tautology (e.g. 'This orphan has no father')
5. *X* is a contradiction (e.g. 'This orphan has a father')
6. *X* presupposes *Y* (e.g. 'My father is at home' presupposes 'I have a father')
7. *X* is semantically anomalous (e.g. 'The orphan's mother lives in New York')

This is not a complete list of types that might be considered as basic statements, but includes the most commonly discussed types. The contrasting relationships between those types bracketed together will be clear from the examples.

Why choose these as basic statements? Firstly, because they are statements at a level where investigators seem to find themselves intuitively in agreement. A second reason, no doubt connected with the first, is that they are statements easily translatable into terms of truth and falsehood, notions which all normal users of language understand. This in turn means that they lend themselves to supporting tests of validity (of which more later). The point about truth and falsehood can be demonstrated by the following partial definitions:

1. *X is synonymous with Y*
   X has the same truth value as *Y*: i.e. if *X* is true, *Y* is true: also if *X* is false, *Y* is false; and vice versa.
2. *X entails Y*
   If *X* is true, *Y* is true; also, if *Y* is false, *X* is false.
3. *X is inconsistent with Y*
   If *X* is true, *Y* is false; also, if *Y* is true, *X* is false.
4. *X is a tautology*
   X is invariably true.
5. *X is a contradiction*
   X is invariably false.
6. *X presupposes Y*
   If *X* is true, *Y* is true; also, if the negation of *X* is true, *Y* is true.

*'Orphan' is sometimes taken to mean a child lacking just one parent (see O.E.D.), but as this usage is unusual, the more common sense has been adopted.

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7. *X is semantically anomalous*
   X is absurd in the sense that it presupposes a contradiction (therefore it makes no sense to ask whether *X* is true or false).

(On the status of 6 (presupposition) there is much disagreement: see Chapter 14.)

Why are these no more than partial definitions? Because if notions like synonymy were defined purely in terms of truth and falsehood, they would be wide enough to include cases which we recognize as belonging to that category on the basis of factual knowledge of the 'real world', rather than on the basis of linguistic knowledge. For each 'semantic' category there is a corresponding 'factual' category; for example:

1. *X* 'Charlotte lives in Paris' has the same truth value as *Y* 'Charlotte lives in the capital of France'.
2. If *X* 'It has just been raining hard' is true, then *Y* 'The ground is wet' is true; also, if *Y* is false, *X* is false.
3. If *X* 'John has just eaten a seven-course meal' is true, then *Y* 'John is hungry' is false; also, if *Y* is true, *X* is false.
4. 'Houses are made of solid materials' is invariably true.
5. 'Mr Smith bit his own ear off' is invariably false.

It would be unreasonable and impractical (for reasons mentioned in Chapter 1) to expect a semantic theory to account for all the 'real-world' knowledge which enters into our judgement of truth conditions. We therefore have to exclude examples like these from the domain of semantics, and to add to the above definitions of basic statements the proviso that these statements about truth and falsehood hold *by virtue of conceptual meaning alone*. This brings a problem which will be discussed on pp. 82–4.

But first, let us consider the list of basic statements itself. There are arguments for saying (a) that this list is too short, and (b) that it is too long. It is too short in that, by restricting basic statements to truth-value properties, we restrict semantics to dealing with PROPOSITIONS; that is, to the meanings expressed by declarative sentences, at the expense of other sentence types, such as questions and commands. There is no doubt that questions and commands have their own conditions of 'validity' even though they do not have a truth value. *Yes–no* questions, for example, have the logical characteristic of eliciting a positive proposition ('Yes') or a negative proposition ('No') as their reply, and so it is possible to set up, for each of the basic statements already given, a corresponding basic statement to do with questions. We might call the corresponding properties of *yes–no* questions '*Q-synonymy*',

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'*Q-entailment*', '*Q-contradiction*', etc. Thus 'Is your father a man?' is a pointless question because the only sensible answer to it is 'Yes'. It is a Q-tautology, because its positive answer is a tautology. Similarly, the question 'Is your father a woman?' is a Q-contradiction; and the relation between 'Did you buy any apples?' and 'Did you buy any fruit?' is one of Q-entailment. There is also a systematic relation between propositions and commands, in that a command has a 'satisfaction condition' which may be indicated by a proposition; for example. 'Shut the window, Jane' has a satisfaction condition reported in the proposition 'Jane will shut the window'. Thus the command 'Play this duet for three instruments' is semantically anomalous in a way which is parallel to the semantic anomaly of 'You will play this duet for three instruments'. In effect, it is an impossible command.

No doubt we intuitively recognize the synonymy, absurdity, etc., of questions and commands just as we recognize the equivalent properties of propositions. But there would be little point in setting up special basic statements for questions and commands since, on the whole, by a few simple rules these could be reduced to the types of basic statement already listed. In any case, it seems that propositions are more 'basic' in the sense that when we judge the validity of non-propositions we do so against the standard of corresponding propositions. (For example, a natural reaction to the question *Do any of the orphans have fathers?* would be *What a silly question! of course they don't – orphans don't have fathers* – where the final tautological proposition provides the reason for regarding the question as absurd.)

Truth-based Semantics

This argument could be taken further, to the effect that the types of basic statement should be reduced to a smaller number of types, or even to just one type. Synonymy, for example, can be expressed as bi-directional entailment: '*X is synonymous with Y*' means the same as '*X entails Y* and *Y entails X*'. Similarly, the inconsistency of *X* and *Y* can be expressed as an entailment relation between *X* and the negation of *Y*, and between *Y* and the negation of *X*. We can even define tautology and contradiction in terms of entailment: a contradiction is a proposition whose negation is a tautology, and a tautology is a proposition which is entailed by all other propositions. In this way all basic statements can be translated into statements about entailment.

There is nothing to prevent us, then, simplifying the goals of semantic theory by limiting it to the explanation of one kind of basic statement: *X* entails *Y*. A theory whose goal is formulated in this way may be called

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an INFERENTIAL theory, since by explaining entailments (including entailments where *X* and *Y* are conjunctions of simple propositions) one would in effect account for a native speaker's ability to infer the truth of some propositions in his language from the truth of other propositions; or to put it more informally and generally, the object would be to explain one's ability to use one's language logically. Geoffrey Sampson adopts this view of semantics in *The Form of Language* (1975, p. 140).

Another way to formulate the goal of semantics is potentially equivalent to this. In a TRUTH-CONDITIONAL approach to semantics, it is proposed that knowing the meaning of a sentence is equivalent to knowing the conditions under which that sentence would be true. Hence all statements about meaning are formulated as statements about truth conditions:

(1) *S* is true if and only if p

(where *S* is a sentence and p is a set of propositions describing the truth conditions of *S*). This formula is taken from the work of the logician Tarski, who was interested in formalizing the concept of truth for mathematical languages; but it has since been proposed that the same type of formalization can be used to specify meaning in natural languages such as English. However, here truth-conditional semantics encounters the by-now-familiar problem of 'contingent truth' – truth by virtue of fact, rather than by virtue of linguistic necessity. For instance, one of the truth conditions of 'It has just been raining hard' is that the ground is wet, but few people would want to include this fact in the semantic specification of that sentence. To make truth conditions match what we ordinarily understand by meaning, therefore, Ruth Kempson (1977) strengthens Tarski's formula as follows, requiring that the conditions obtain as a matter of necessity:

(2) *S* means that p ≡ necessarily *S* is true if and only if p

This makes truth-conditional semantics perform the same task as inferential semantics. For by 'necessary truth' we mean, in effect, 'truth by the very nature of language' (ANALYTIC TRUTH) rather than 'truth by virtue of some state of affairs in the real world' (SYNTHETIC TRUTH). Suppose, now, that in the formula (2), p stands for a set of conditions p_1, p_2, p_3, etc. And suppose that each of these conditions is denoted, in the language in question, by a proposition X_1, X_2, X_3, etc. Then saying that *S* means that p is equivalent to saying that *S* ENTAILS each of the propositions X_1, X_2, X_3, etc. (We ignore for the present the discrepancy between sentences and propositions.) On this interpretation, then, both inferential and truth-conditional semantics amount to theories

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whose goal is to explain meaning by accounting for all the entailment relations in a language.

Although this has the advantage of stating the goal of semantics in a maximally simple way, I also see some advantage in maintaining the distinctions between different kinds of basic statement. One of them is that inferential semantics and truth-conditional semantics are restricted, by definition, to propositional meaning: to meaning in relation to truth and falsehood. It is not clear, therefore, how they can be extended (without a redefinition of meaning) to deal with questions and other sentence types. A second reason is to do with accessibility to intuition: if we want to check our basic statements against the intuitions of other speakers (particularly those who are not logicians), to reduce statements about synonymy, contradiction, etc., to more complicated statements about entailment is to replace something which the ordinary language user can understand and react to by something which is more obscure. However, these arguments do not seem to me important, since whichever formulation of the goal of semantics one prefers, the requirements placed on a theory are more or less the same. The point I wish to stress is that there is broad agreement that semantic theory deals primarily with the properties of language which have to do with truth and falsehood: a point of view that may be summarized in the term TRUTH-BASED SEMANTICS.

Ambiguity

Another question which arises here is whether AMBIGUITY should be considered a basic datum of semantics; i.e. whether '*X* is ambiguous' should be classed as a basic statement. It is true that linguists often assume the ambiguity of a sentence is self-evident to native speakers; but *the nature and extent* of ambiguity is often far from clear, and has to be explicated by resort to context clues, paraphrase, etc. It is arguable that ambiguity can always be reduced to a set of basic statements of the kinds that we have already recognized. For example, to show why *Hugo is drawing a cart* is ambiguous, I can say that in one sense it is synonymous with (a) *Hugo is drawing a picture of a cart* and that in another sense it is synonymous with (b) *Hugo is pulling a cart*. The ambiguity is then evident from the fact that (a) and (b) are not synonymous with each other. Since ambiguity in this way can be explained in terms of more basic, truth-based notions, it is probably best excluded from the categories of basic statements. This is not to deny that, informally, linguists often rely on the recognition of ambiguities in the formulation of analyses.

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This brings me to an important point which affects the formulation of basic statements. Earlier I said that the *X* and *Y* used in the basic statement formulae are PROPOSITIONS, not SENTENCES. Ambiguity, on the other hand, is a property of sentences; in fact, an ambiguous (declarative) sentence may be defined as a (declarative) sentence which expresses more than one proposition. This reflects a difference between levels of linguistic statement: sentences are syntactic units, whereas propositions are semantic units; ambiguity is a one–many relation between syntax and sense. Thus we may say that *Hugo is drawing a cart* is ambiguous in that it expresses at least two distinct propositions: 'Hugo is drawing (a picture of) a cart' and 'Hugo is drawing (=pulling) a cart'. Since it is important to know which level of linguistic statement we are discussing, I shall now make explicit a graphic convention which I have used above, and shall continue to use: *italics indicate a syntactic entity, whereas single quotation marks indicate a semantic entity.* (This convention can save a lot of confused thinking, but should be interpreted warily: it is a rough-and-ready device to avoid confusion of levels, but it does not (when single quotes are used) avoid confusion of meanings. For instance, the single quotes of 'Hugo is drawing a cart' make it clear that we are discussing a meaning, but they do not say which meaning we are discussing!)

If ambiguity is a one–many relation between sentence and sense, it might be argued that synonymy is the opposite phenomenon, viz. a one–many relation between sense and sentence. On this basis, it would be appropriate to say that two SENTENCES are synonymous (say *Hugo is drawing a cart* and *Hugo is pulling a cart*) in that they express the same proposition. But if propositions are meanings of sentences, then it would seem illogical to say that two propositions are synonymous, i.e. that two meanings have the same meaning. Notice, however, that we cannot simply define synonymy as sense-equivalence between sentences, since we shall often have to say (as in the example of *Hugo is drawing a cart*) that two sentences are synonymous only with respect to *a certain sense*. Also, I shall later (in Chapter 13) want to argue that two propositions can be equivalent, in that they entail one another, without being identical in sense. For these reasons, I shall be content, for the present, to interpret 'synonymy' loosely, as a property of either sentences or propositions.

Translation Equivalence

Before we leave basic statements, there is one further datum of semantics to be briefly considered: that of TRANSLATION EQUIVALENCE. Should

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'*X* is a translation of *Y*' (e.g. '*Sie singt sehr schön* is a German translation of English *She sings very beautifully*') be included in the list of basic statements? Since nothing was said earlier about *X* and *Y* belonging to the same language, I have already included it by default, to the extent that translating can be defined as finding a synonymous expression in another language. To obtain this data, of course, we have to have access to the intuition of a bilingual speaker, or else consult documentary evidence such as translations, grammars, and dictionaries. But, in principle, it seems that explaining translation should be among the goals of semantics. We should distinguish here between two kinds of semantic theory: a specific theory, which aims to predict all the basic statements of a particular language (say English); and a general theory, which aims to specify the semantic properties of human language in general. The theory of a particular language, which we may call a SEMANTIC DESCRIPTION, is included in the general theory, which has as its 'basic statements' statements about the general form of semantic descriptions. In this sense, a general semantic theory predicts semantic 'universals' (see pp. 26–30 and Chapter 12) which may only be falsified at one remove, as it were, by a demonstration that there is some language which cannot be described in the terms that it specifies. Needless to say, a general semantic theory, so considered, is so highly abstract that it may be extremely difficult to falsify. But it is within the domain of such a theory that semantic comparisons of languages, and the evidence of translation equivalence, should be considered. In this sense, translation equivalence implies an extension of the goals of semantics beyond those which have so far been assumed.

Translation, in the everyday sense, involves both much more and much less than the truth-based notion of translation equivalence. An 'ideal' translation would be one translating the whole communicative value (see p. 23) of a text into another language. But since this is generally impossible (conspicuously so with literary texts), the translation of sense is often sacrificed in order to preserve other types of meaning-equivalence. The difference between 'free' and 'literal' translation is a question of how far sense-equivalence is maintained in preference to other factors.

Semantic Testing

The notion of 'basic statement' not only codifies and controls the use of intuition; it also shows the way towards testing procedures which help the investigator to go beyond his own intuitions and to discover how far his own findings have general validity among the linguistic community at large. This is all the more necessary where the linguist is studying a

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language of which he is not a native speaker, so that his intuitions are likely to be unclear or second-hand.

If the results are to be truly representative of a linguistic community, such tests have to be presented in a way that can be understood by people with no technical knowledge of the language. For example, it would be little use facing a random collection of adult English speakers with the question 'Does sentence *X* entail sentence *Y*?', but it might well be worth while to ask them 'If sentence *X* is true, does sentence *Y* have to be true?' Hence the value of reducing questions of conceptual meaning to questions about truth and falsehood: notions that are familiar to everyone. Here are two examples of such tests, the first designed to test entailment and inconsistency, the second to test tautology and contradiction:

Entailment and Inconsistency Test

X: *George is my half-brother*
Y: *George is my brother*

Instructions:
Assuming *X* is true, judge whether *Y* is true or not.
If you think *Y* must be true, write 'YES'.
If you think *Y* cannot be true, write 'NO'.
If you think *Y* may or may not be true, write 'YES/NO'.
If you don't know which answer to give, write '?'.

The responses 'YES' and 'NO' in this test are taken to be diagnostic of entailment and inconsistency respectively.

Tautology and Contradiction Test

My half-brother is my brother

Instructions:
If the statement would be true whatever the situation, write 'YES'.
If the statement would be false whatever the situation, write 'NO'.
If the statement could be true or false, write 'YES/NO'.
If you don't know which answer to give, write '?'.

Here again it is the first two responses ('YES' and 'NO') which are diagnostic: they indicate tautology and contradiction respectively.

From my earlier remarks on behavioural experiments (pp. 72–3), one would not expect a 100 per cent confirmation from such tests; *ad hoc* metaphorical interpretations and other 'nuisance factors' inevitably interfere. However, a predominance of 80 per cent or more in one direction or another can be taken to be a fairly strong confirmation of a basic statement. Here are examples of such results:

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Entailment and Inconsistency Test

(Examples from Leech and Pepicello, 1972)

Test Sentences	Percentages			
	Yes	*No*	*Yes/No*	*?*
1. *X*: Someone killed the Madrid chief of police last night. *Y*: The Madrid chief of police died last night.	96	0	3	1
2. *X*: Every radio made by Stumpel carries a 12-month guarantee. *Y*: Some radios made by Stumpel do not carry a guarantee.	4	88	7	1

Notice that, in accordance with scientific method (p. 60), we should regard such results as *confirming or falsifying a hypothesis*, rather than as means of *discovering* facts about meaning. Treated as discovery procedures, they fail if they cannot distinguish 'semantic' from 'factual' truth-statements. But viewed as tests of hypotheses (basic statements), they require neither the linguist nor the informant to make such discriminations; since basic statements are those statements which a theory predicts to be true, the 'factual' category is defined simply as that set of observations which the linguist omits from the domain of his theory – and which he is therefore not interested in testing.

However, because the results of semantic tests are quantitative, they cannot be said to confirm or falsify basic statements absolutely; the most one can say is that they *tend* to confirm or falsify basic statements – which in practice means that they tend to confirm or disconfirm what the investigator already has intuitive evidence for. There are many other problems in semantic testing: for example the problem of how to test ambiguous sentences. But the fact that by using informant tests we can in principle find wider, more systematic evidence than individual intuition is important – particularly for cases where individual intuition is unclear.

Analytic and Synthetic

We return now to the problem which has already claimed our attention a number of times, and which threatens the very basis of any theory of meaning: the problem of how to draw the line between 'semantic knowledge' and 'factual knowledge', or, in terms which have long been familiar in philosophy, between ANALYTIC TRUTH (truth by virtue of meaning, truth in all possible worlds) and SYNTHETIC TRUTH (truth by virtue of fact). We have seen that semantic theory assumes such a distinction; but there is, on the other hand, an influential sceptical school

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of thought in philosophy (see especially Quine, 1960) which has argued against it. Experimental evidence (see Steinberg 1970; Leech and Pepicello 1972) such as it is backs up both sides of the argument, suggesting on the one hand a large area of agreement about what cases are analytic or synthetic, and on the other hand an area of borderline uncertainty. (Consider, for example, the uncertain analyticity of propositions like 'Murder is a crime' or 'Everyone is born before he dies'.)

I suggested above that thinking of basic statements as those statements which the theory predicts to be true, we do not have to solve this problem, because the distinction is drawn by the theory itself. But the problem does not go away entirely; rather, it shifts to a different place. In the introduction to this chapter, I noted a number of requirements for a semantic theory: requirements of explicitness, completeness, simplicity, strength, and empirical testability. The analytic/synthetic problem does not, I have argued, threaten testability; but it does threaten completeness. That is, unless we can decide which truth-statements are analytic and which are synthetic, we shall have no way (apart from arbitrary fiat) of deciding what is the domain of observations that the theory is meant to account for, and hence of knowing when *all* those observations have been predicted by the theory. This may seem an unimportant priority – especially since all semantic descriptions one can at present envisage are likely to be glaringly incomplete. But without criteria for defining the domain of a theory, one cannot conclusively apply any criterion of simplicity (for simplicity implies that we can compare alternative theories applying to the same domain). So the whole basis for evaluating one's theory remains shaky.

Nevertheless, the analytic/synthetic distinction becomes, on this interpretation, somewhat less problematic; what we now require is a *principled way* of deciding which facts our semantic theory has to account for. Let us take, as a particular case, the definition of the word *dog*. There are indefinitely many properties of dogs (positive and negative) about which it is possible to construct invariably false propositions:

The dog had eighty legs.
Dogs have horns.
Some dogs talk sensibly.
etc.

If we wanted our semantic theory to explain the absurdity of these propositions, we should have to include such features as 'four-legged', 'hornless', 'incapable of speech', in our definition of *dog*. But if we included *all* such features, we should end up not with a dictionary entry, but with an encyclopedia entry of indefinite length. The two possible

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solutions are therefore either (a) to include some features of this kind, but not others; or (b) to exclude all such features. The first solution is in fact no solution, because it still leaves us with a task of arbitrary demarcation: we arrive at an indefinite number of possible definitions, between which the choice is a matter of tossing a coin. In other words, we find ourselves claiming that *dog* has indefinitely many meanings, but none is more 'correct' than any other. The second solution, which does not have this drawback, amounts to a refusal to anatomize the meaning of *dog* any further than 'an animal of the canine species'. The conclusion is, then, that the oddity of propositions like 'The dog had eighty legs' is something that zoology has to explain rather than conceptual semantics. If we can employ a strategy of this kind (in effect, a strategy for deciding on practical grounds what it would be reasonable for a semantic theory to account for), we may go a long way towards solving the demarcation problem.

Prototypic Categories

It is helpful here to bring in a psychological viewpoint to rescue us from a philosophical dilemma. From the viewpoint of cognitive psychology, the analytic/synthetic problem is the problem of how man's mental dictionary (part of his language-using capability) interrelates with his mental encyclopedia (his general capacity for assimilating, storing and implementing experience of the world). Although much work in this field remains speculative, it has become clear that our ability to interpret and organize experience depends heavily on mental 'blueprints' called CATEGORIES. Moreover, research by Eleanor Rosch and others (see, for example, Rosch *et al.*, 1976) has indicated that we recognize members of a category by matching them with a PROTOTYPE or 'typical example' of that category. For example, not all fish are equally fishlike: herrings and trout will be more 'prototypic' than (say) eels or octopuses. We may be uncertain about the periphery of the category (for example, are barnacles or killer-whales fish?) but there will be little disagreement on what is a typical fish. The same scheme of category recognition (that categories have a clear centre but unclear and variable boundaries) applies also to perceptual processes (e.g. pattern recognition and colour perception) and to discriminations made by non-human species, so it is not particularly to be associated with language.

Now natural species, such as dogs, fish, trees, etc., are good examples of prototypic categories (I am talking not of the biologist's but the lay-person's recognition of species), so it is reasonable to see a support in this for the preceding decision to treat propositions about properties of

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dogs as synthetic: they reflect our cognitive ability to recognize bundles of properties distinguishing the category 'dog'. In this context, all we may say about the meaning of the word *dog* is that it names a particular category. Or, in psychological terms, whenever we interpret the word *dog*, we simply associate it with the category of canines. There is no reason to suppose that our mental dictionary separately connects up the word *dog* with individual properties characterizing dogs – such as barking and tail-wagging.

This accords with the simplest possible view of conceptual meaning: the so-called NOMINAL VIEW OF MEANING (see Putnam 1975; Clark and Clark 1977, pp. 413–14), which says that the relation of a word to its meaning is simply a naming relation; that just as *Berlin* names a particular place, or *Good Queen Bess* names a particular person, so *dog*, *table*, *bird*, or *cup* each names a particular category. This would reduce the role of conceptual semantics, in explaining word meaning, to the minimum of matching a word to a category. But the nominal view appears to be too restricted: firstly, it can only be easily applied to common nouns (rather than to adjectives, verbs, etc.); and secondly, it does not allow us to treat as analytic propositions which spell out relations between categories (whether of inclusion or exclusion), such phrases as 'Oaks are trees', 'Milk is not a metal', 'Skyscrapers are tall buildings', 'Carpenters make things out of wood', etc. It is entirely natural to say that we know that these are true because we know the meanings of words like *oak*, *milk*, *carpenter*, rather than because we know something about the real world. They resemble, indeed, the definition statements that we find in dictionaries.

Thus in addition to the category-recognizing ability, human beings also have a different order of cognitive ability – something which is much more closely tied to language – which is the ability to recognize structural relations between categories. This ability is not, so far as one can tell, shared by non-human species, and it is reasonable to postulate that it is an aspect of our semantic competence – part of the specifically human language-learning and language-using competence – rather than something that belongs to more general cognitive processes.

So there is a psychologically plausible way of interpreting the boundary between linguistic and real-world knowledge. However, the psychological viewpoint also discourages us from assuming too absolute a boundary between analytic and synthetic; it would not be surprising if the remarkable coordination which the human mind achieves between experience, thought, and language were the result of a more complex integration than current models suggest. I shall have more to say about this on pp. 119–22. Meanwhile, I hope to have shown that the problems

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surrounding the distinction between analytic and synthetic truth do not prevent one from assuming, as a reasonable postulate, that such a distinction is a real one.

Elements of a Semantic Description

We are now in a position to look at the overall shape of an ideal semantic description which deals with conceptual meaning for a particular language.

1. The theory predicts basic statements of synonymy, entailment, tautology, contradiction, etc., for some language. The number of such statements that can be made about a language is vast – in principle, infinite – but the theory must predict them by means of a finite number of rules and constructs (the fewer and the simpler these are, the better).

2. The theory also relates meaning to syntax within an overall theory of how the language works. A theory of meaning in isolation from syntax is inconceivable, for we cannot identify basic statements in natural languages without identifying the sentences whose meanings are referred to in basic statements. In practice, this means that we must give (a) an account of word-meanings, (b) an account of sentence meanings, and (c) an account of the way in which word-meanings and sentence meanings are related.

3. The theory must also relate meaning to pragmatics – the way in which sentences are actually used and interpreted in speaker–hearer communication. This is also a necessity, because (as indicated on pp. 69–70) meaning 'in the abstract', that which belongs to semantic competence, cannot be entirely separated from the circumstances of language use.

4. The theory must be part of a more general theory which defines the nature of semantic descriptions, and therefore constitutes a specification of language universals – the common properties of meaning which are manifest in all language.

I call this 'an ideal semantic description' advisedly, because it lays down a programme of research so immense as to be beyond realistic contemplation. And yet, unless all four elements above are included, the description will be incomplete – which means, in fact, that we shall not ultimately be able to judge how simple, how good a theory it is. The major difficulties are these two:

(A) All existing descriptions of languages – both in semantics and in linguistics as a whole – are fragmentary. We are a long way from the goal of completeness.

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(B) The very delimitation of the domain of semantics – of what semantics is trying to explain – is uncertain. This is evident if we consider that each of the four elements listed above involves a problem of demarcation: how to delimit the semantics of a language from (1) real world knowledge; (2) syntax; (3) situational knowledge; and (4) the semantics of human language in general.

It is understandable that much of current thinking in semantics is taken up with controversy about basic issues – particularly 'territorial disputes' about the factors mentioned in (B) above – rather than in the detailed working out of theories. And moreover, even when theories are worked out in some detail, there are as yet no clear criteria for choosing between competing theories.

Conclusion

Since there is such a wide gap between goal and achievement in semantics, there appears to be plenty of justification for a pessimistic answer 'No' to the question posed in the title to this chapter. But I still maintain that the progress made in the subject over the past twenty years – both in the clarification of goals and in the formulation of theories and descriptions – vindicates the application of scientific method in semantics. Quine (1960, p. 3) has quoted Neurath's comparison of science to a boat 'which, if we are to rebuild it, we must rebuild plank by plank while staying afloat in it'. The leaky ship of semantics is still making headway, even though there are some planks missing in important places. In the remainder of this book I shall focus on the major areas in which progress has been made.

Scientific method is a term for a broad set of procedures and principles which we apply to the best of our ability in order to find out the truth; and in studying such a philosophically troubled subject as semantics, we have to adapt them with as much ingenuity as we can to its peculiar problems. One symptom of this adaptation – which reflects a general tendency in linguistics and indeed in the human sciences as a whole – is a preference for talking about MODELS rather than about THEORIES. The significance of this terminological shift is rarely discussed, but can best be explained as follows. Whereas theories claim to tell us what reality is like, models claim to tell us what reality can and could be like – given certain speculative assumptions. We can, for example, construct a model of the mind as a computer, or of society as a market, knowing that this is not true, or only partially true, but seeking in this way to provide a detailed but perhaps idealized understanding of some domain which must await incorporation within a more comprehensive theory.

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In this way, almost by act of faith, we define a domain for semantics and study it, knowing that our models cannot be fully explanatory unless and until they are incorporated into a more general theory of human language and, more broadly, of human thought and communication. But then, acts of intellectual faith – what Popper calls 'bold conjectures' – are the springboards of science.

My aim in the remaining chapters will be to explore a model of conceptual meaning, and thereby to take the reader into the heartland of semantics – the investigation of topics which have been the foci of recent research and debate, such as word-meaning (Chapters 6–7) and sentence meaning (Chapters 8–9), the nature of the lexicon (Chapter 11), semantic universals (Chapter 12), and the relations between semantics and syntax (Chapters 10 and 17), and semantics and pragmatics (Chapters 14–16). I shall, on the whole, follow the method of developing one model, rather than of comparing different models (making clear in the notes how far my model contrasts with, or is paralleled by, others). Similarly, I shall concentrate on one language – English – rather than compare different languages. By limiting the field in this way, even though I must strike a balance between depth and breadth of treatment, I shall aim to give a coherent picture of what semantics is about.

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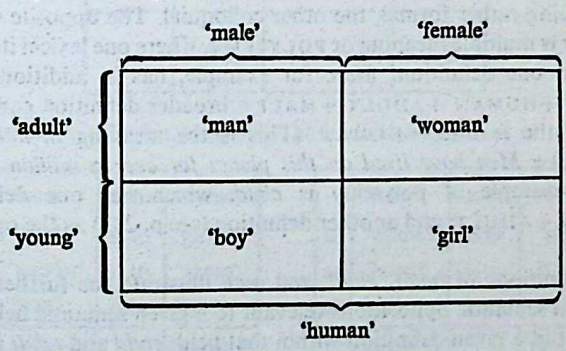
6. Components and Contrasts of Meaning

I shall concentrate in this chapter and the following chapter on the formal description of word-meanings, and will leave till Chapter 8 the question of how such meanings are combined to make up the meanings of whole sentences.

Components of Meaning

The analysis of word-meanings is often seen as a process of breaking down the sense of a word into its minimal components. A very simple example of this is provided by the words *man*, *woman*, *boy*, *girl*, and other, related words in English. These words all belong to the semantic field 'the human race', and the relations between them may be appropriately represented by a two-dimensional 'field diagram':



The diagram shows two dimensions of meaning: that of 'sex' and that of 'adulthood'; a third dimension is presupposed by the isolation of the field as a whole: that between 'human' and 'non-human' species.

Another, in many ways more satisfactory, way to represent these senses is to write formulae in which the dimensions of meaning are expressed by feature symbols like HUMAN and ADULT:

$$\left\{\begin{array}{l}+\text{HUMAN 'human'}\\-\text{HUMAN 'animal, brute'}\end{array}\right. \quad \left\{\begin{array}{l}+\text{ADULT 'adult'}\\-\text{ADULT 'young'}\end{array}\right. \quad \left\{\begin{array}{l}+\text{MALE 'male'}\\-\text{MALE 'female'}\end{array}\right.$$

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The meanings of the individual items can then be expressed by combinations of these features:

man: +HUMAN +ADULT +MALE
woman: +HUMAN +ADULT −MALE
boy: +HUMAN −ADULT +MALE
girl: +HUMAN −ADULT −MALE

These formulae are called the COMPONENTIAL DEFINITIONS of the items concerned: they can be regarded, in fact, as formalized dictionary definitions. The dimensions of meaning themselves will be termed semantic OPPOSITIONS.

I should point out that the features of an opposition are mutually defining. We may, for the present, treat it as an unfortunate side-effect of the labelling system that those features labelled '+' seem to be positive or marked, and those labelled '−' as negative or unmarked. In logical terms, for 'male', and 'female' one could use the reverse symbols −FEMALE and +FEMALE, or conventional symbols like ♂ or ♀. And as we shall see later, not all semantic contrasts are binary.

Using formulae like these, we can show the synonymy of two items by giving them both the same componential definition. For example, both *adult* (in its human sense) and *grown-up* can be given the same definition +HUMAN +ADULT, even though they clearly differ in stylistic meaning, the one being rather formal, the other colloquial. The opposite case to synonymy is multiple meaning or POLYSEMY, where one lexical item has more than one definition. *Man*, for example, has in addition to its definition +HUMAN +ADULT +MALE a broader definition consisting simply of the feature +HUMAN. (This is the meaning of *man* in a sentence like *Men have lived on this planet for over a million years.*) Another example of polysemy is *child*, which has one definition +HUMAN −ADULT, and another definition (see p. 243) as the opposite of 'parent'.

The definitions of *adult*, *child*, and *man* illustrate the further point that not all semantic oppositions relevant to a given semantic field need be operant in a given definition within that field: *child* and *adult* are not specified for sex, *man* (= 'human being') is unspecified for both sex and adulthood, and the adjective *female* (−MALE) is unspecified for both species and adulthood. We could, if we liked, represent this neutralization of oppositions by the symbol 'o'; the more fully expressed definitions would then be:

man: +HUMAN (oMALE) (oADULT)
adult: +HUMAN +ADULT (oMALE)
child: +HUMAN −ADULT (oMALE)
female: (oHUMAN) (oADULT) −MALE

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In general, though, the 'neutral' dimensions may be omitted, and indeed it may be misleading to attempt to include them, as the number of semantic oppositions potentially available may be very large, and any attempt to list them exhaustively is likely to be incomplete.

The term COMPONENTIAL ANALYSIS has often been used for the method of analysis illustrated here, that of reducing a word's meaning to its ultimate contrastive elements. As a distinctive technique, componential analysis first evolved in anthropological linguistics as a means of studying relations between kinship terms, but it has since proved its usefulness in many spheres of meaning. It bears some resemblance to the mathematical process of factorizing a number, and a useful informal method of arriving at components of meaning is suggested by the analogy of arithmetical proportions. Just as we can pick out a common factor from a set of numbers by recognizing a proportionality in:

	4	is to	10
as	6	is to	15
as	8	is to	20
	(2*x*)		(5*x*)

so we can extract the features of sex and adulthood in:

	'man'	is to	'woman'
as	'boy'	is to	'girl'
as	'gander'	is to	'goose'
as	'ram'	is to	'ewe'
	(male *x*)		(female *x*)

	'man'	is to	'boy'
as	'woman'	is to	'girl'
as	'horse'	is to	'foal'
as	'cat'	is to	'kitten'
	(adult *y*)		(young *y*)

In the remainder of this chapter I shall elaborate the method of representing meaning in terms of semantic COMPONENTS or FEATURES.

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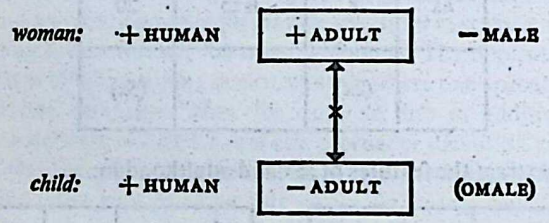
Meaning Relations

The only words for semantic relatedness in general use in our language are *synonym* (word of same meaning) and *antonym* (word of opposite meaning). But even the very simple illustration I have given shows up the inadequacies of this terminology, particularly in regard to contrasts of meaning. The proportions above show that there is no one answer to the question 'What is the antonym of *woman*?': *girl* and *man* are equally suitable candidates. The trouble is that the word 'antonym' encourages us to think that words contrast only on a single dimension; whereas in fact they may contrast with other words on a number of dimensions at once. Therefore a more general useful notion of 'semantic contrastingness' than antonymy is that of *incompatibility* (otherwise termed *meaning exclusion*). We may say that two componential formulae, or the meanings they express, are *incompatible* if the one contains at least one feature contrasting with a feature in the other. Thus the meaning of *woman* is incompatible with that of *child* because of the clash between +ADULT and −ADULT:



Other meanings incompatible with 'woman' are 'man', 'boy', 'girl', 'cow', not to speak of more remotely contrasted meanings such as 'tree' or 'screwdriver'.

Another relationship of meaning it is useful to distinguish is 'meaning inclusion' or *hyponymy*. This relationship exists between two meanings if one componential formula contains all the features present in the other formula. Thus 'woman' is hyponymous to 'grown-up', because the two features making up the definition 'grown-up' (+HUMAN +ADULT) are both present in the definition 'woman': +HUMAN +ADULT −MALE. 'Woman' is also hyponymous to 'female' and 'human being', as the following diagram shows (hyponymy is shown by the spatial inclusion of one formula, marked by an unbroken border, within the other, marked by a broken border):

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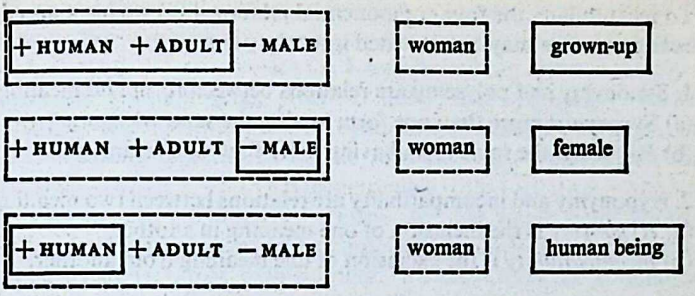
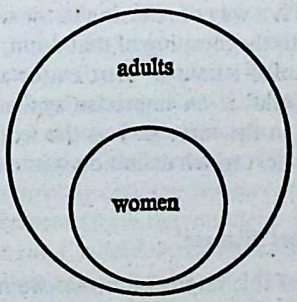


For a reason to appear later, identity of meaning is treated as a special case of hyponymy; therefore 'woman', like any other componential meaning, is hyponymous to itself:

One way to describe hyponymy is in terms of 'genus' and 'differentia'. The more specific term is called the *hyponym* of the more general, and the more general is called the *superordinate* term.

'Inclusion' is a confusing word to use in connection with meaning, because while in one respect (as we see from the diagram below) 'grown-up' includes 'woman', in another respect, the opposite is the case: 'woman' includes 'grown-up' in the sense that a general term might be said to include the meaning of the more specific term:



But in fact, in this latter sense of 'inclusion', we are really talking about the *reference* of a term (the set of individuals or objects it refers to), not the *meaning*. Because there is this inverse relationship between 'meaning inclusion' and 'referential inclusion', it is safer to avoid talking of inclusion altogether, and for this reason I follow John Lyons (1977, pp. 291–5) in using the term *hyponymy*.

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To recapitulate, the four componential relationships we have noted in the chapter so far may be separated into two pairs:

1. Synonymy and polysemy are relations between form and meaning:
(a) *Synonymy*: more than one form having the same meaning.
(b) *Polysemy*: the same form having more than one meaning.

2. Hyponymy and incompatibility are relations between two meanings:
(a) *Hyponymy* is the inclusion of one meaning in another.
(b) *Incompatibility* is the exclusion of one meaning from another.

It is clearly necessary to regard hyponymy and incompatibility as relations between senses rather than between forms, for the reason applied to entailment and inconsistency, etc., in Chapter 5: in cases of ambiguity or multiple meaning, only *one* meaning of a form will generally enter into a semantic relationship. It would be wrong to say the word *child* is incompatible with the word *woman*, because it is for only one of the two main senses of *child* (that represented by +HUMAN −ADULT) that this statement is true. In the kinship sense of *child*, it is quite legitimate to say that a woman aged fifty is the *child* of someone in his seventies or eighties.

To avoid the loose thinking that arises from confusing form and meaning, I have written words in italics when discussing polysemy and synonymy, and written them in quotation marks when discussing hyponymy and incompatibility. This conforms to the convention whereby the italicized words represent forms, and the words in quotes represent the meanings corresponding to those forms.

For example, *child* is a way of referring to the noun *child*, while 'child' is a way of referring to the meaning of that noun, i.e. is an informal and imprecise equivalent of +HUMAN −ADULT (or any other meanings the word may have). 'Child' is an imprecise symbol for the very reason that it is ambiguous in the same way as the word *child* itself is: so we can only tell from context which definition is intended.

The Semantic Notation: 'Signese'

It is partly because of this imprecision that we need special notations, like that of componential analysis, for representing meanings. There are no standard notational conventions for linguistic semantics, and readers who compare this book with others may be disturbed by variations of symbolization that they find. But once it is realized that such conventions are simply devices for making meanings clear, there is surprisingly little difficulty in adapting to different notational practices.

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There is a potential confusion between notational formulae and the meanings they are meant to represent: for example, in using a formula like +HUMAN +ADULT −MALE, I may be talking about it simply as a piece of notation (e.g., when I assert that +HUMAN +MALE −ADULT consists of three feature symbols), or I may be talking about it as a meaning represented by the formula (e.g., I may assert that +HUMAN +ADULT −MALE is incompatible with +HUMAN −ADULT). This ambivalence is relatively harmless, for the whole point about a notation is that it is meant to be completely unambiguous in standing for one meaning rather than another. We may think of a notation, indeed, as a special language; and in this and the next three chapters I shall be gradually building up a language which directly represents the meanings of English: an artificial FORMAL language which for convenience I shall call 'SIGNESE'. Componential formulae as so far introduced are but a small part of this language, which is designed ultimately to be capable of representing all the conceptual meanings of English.

It is because of the prevalence of ambiguities in a natural language like English that we need such a language. Signese is a FORMAL LANGUAGE (like the languages of mathematics and formal logic), and this means it has two crucial properties. Firstly, it is UNAMBIGUOUS in that every expression in Signese has just one meaning; secondly, it is graphically ARBITRARY, in the sense that any written symbol in Signese can be arbitrarily replaced by some other written symbol, so long as this substitution is consistent and does not lead to ambiguity. The choice of symbols, we could say, is entirely at the whim of the 'inventor' of the language. In my initial example, I used the symbols MALE, ADULT and HUMAN (which happen to be English words); but I could have equally well replaced these consistently by symbols belonging to some other language (for example, Portuguese HUMANO, ADULTO, MACHO), or by symbols like *u*, *v*, and *g*. I choose English words as my symbols because I want the notation to suggest the meanings I have in mind, so that formulae will not be completely opaque. But any other graphic symbols will do; their distinctiveness is all that matters. I labour this point, because it is often felt (and indeed seriously argued by semanticists) that componential analysis is circular, because it merely uses one set of English words to stand for another set of English words (or even the same English words). That this is not so will be clear in the next section.

The importance of having a formal language to represent meanings is shown in this diagram:

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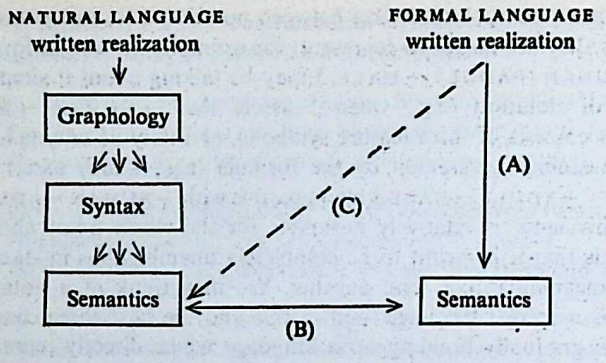

The natural language, as a multi-level coding system (see p. 11), admits of ambiguities at each level of decoding a written message; thus the same written realization may represent many different meanings. But the formal language admits of only one reading of a particular written formula, as indicated by the arrow (A). A formal language such as Signese, designed to represent the meanings of English, is also intended to have the same semantic properties as English (this equivalence is shown by the arrow (B)). Therefore, if this equivalence is achieved, Signese gives an unambiguous SEMANTIC REPRESENTATION of expressions in English, as indicated by the arrow (C). Without a formal language of this kind, we could not write about meanings unambiguously, nor could we construct clear descriptive theories about meaning. Formal languages play an indispensable role in rendering semantic discussion clear and explicit, so close attention is given in this book (and in semantics in general) to notational matters. But, at the same time, we should not take notations too literally, remembering that their symbols are arbitrary, and have no value except insofar as they reveal structures and interrelationships of meaning.

It is, in any case, unlikely that notations mirror exactly the meanings which are assumed to underlie them. Written symbols occur in lines on two-dimensional paper. But there is no reason to expect that the mental entities we study in semantics are like this. In fact, componential analysis assumes that meanings are organized in multi-dimensional contrasts. This lack of fit fortunately causes no problem of representation, for a formal language, even though it does not tolerate ambiguity, can tolerate synonymy. To get the componential analysis to mirror the structures of meaning more precisely, we can introduce conventions of synonymy and well-formedness into the notation. I shall begin by specifying the following conventions for Signese:

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(a) That the order in which components are placed is not significant in distinguishing meanings; thus +HUMAN +ADULT +MALE and +MALE +HUMAN +ADULT are simply notational variants of one another.
(b) That if there are two occurrences of the same feature in a formula, one of the occurrences is redundant; thus, +HUMAN +ADULT +MALE +ADULT is simply a notational variant of +HUMAN +ADULT +MALE.
(c) That the occurrence in the same formula of contrasting features (e.g. +MALE and −MALE) is self-contradictory, and a violation of the notational system. Thus the formula +HUMAN +ADULT +MALE −MALE is not a well-formed formula, and can have no reference to reality (no male women exist). If we met the phrase *male woman*, we would be forced to treat it as a play on words, and to try to find some special non-contradictory meaning for it – for example, by understanding it figuratively as 'a male person who behaves (in certain ways) like a woman'.

Justifying a Componential Analysis

Justifying a componential analysis means showing that the contrasts and combinations of meaning one has recognized are necessary and sufficient to explain relevant data. The data of semantic analysis are regarded here (in line with the argument of Chapter 5) as a set of basic statements of entailment, etc. Thus the following relations of entailment are among the evidence I can produce in favour of the definitions I have given for words like *woman* and *man*:

'The secretary is a woman' entails 'The secretary is an adult.'
'I met two boys' entails 'I met two children.'

The link between componential analysis and basic statements is made through the mediation of such meaning relations as hyponymy and incompatibility: just as these have been defined in terms of componential analysis, so basic logical relationships such as entailment and inconsistency (or at least the most important types of entailment and inconsistency) can be defined in terms of hyponymy and incompatibility. A more precise understanding of these interconnections will emerge in Chapter 8; but for the present, we may observe from the examples above that if two propositions differ only in the substitution of a hyponym for a superordinate term, then one of the assertions entails the other. A similar sort of relation (though more restricted) holds between incompatibility and inconsistency:

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'The secretary is a woman' is inconsistent with
'The secretary is a man.'
'Her best pupil is a boy' is inconsistent with
'Her best pupil is an adult.'

(Incidentally, in all such relations, we have to assume that expressions of definite meaning like *the secretary, she, John*, etc., have the same referent in both sentences.) (see p. 155.)

Some types of tautology and contradiction, too, can be defined in terms of hyponymy and incompatibility, as may be gathered from these examples:

'That man is an adult' is a tautology.
'That boy is a woman' is a contradiction.

Since the synonymy of two propositions is a special case of entailment (e.g. 'John is a grown-up' entails 'John is an adult'), it is simplest to define hyponymy (as we have already done) to include identity of componential meaning. Then there is a precise correspondence between entailment and hyponymy, and just as every proposition entails itself, so every componential concept is hyponymous to itself.

Some idea has now been given of how a componential analysis may be validated by following out its empirical consequences: that is, by using it to predict basic statements, which may then be compared with judgements available to the analyst through introspection or informant testing. Yet another factor he has to take into account in the assessment is how economical his analysis is: for example, whether he fails to make a particular generalization, and so ends up stating the same rule in two different places, instead of stating it only once.

Justifying componential analysis by following out its logical consequences in terms of basic statements implies giving a certain priority to sentence meaning over word-meaning; and this priority follows from my claim, in Chapter 5, that truth and falsehood, which are properties of sentence meanings but not of word-meanings, are the surest basis for testing descriptions of meaning. Let us consider what this means as it applies to a concept like synonymy. The assumption is that an English-speaking informant will react with less confidence and consistency when asked, say, to judge the synonymy of *scared* and *frightened* as isolated words, than when asked to judge the synonymy of equivalent sentences containing them, such as (a) *John is scared of his father* and (b) *John is frightened of his father*. When asked to consider the equivalence of the words, he would probably be bothered by the more emotive and colloquial overtones of *scared* (factors of affective and social meaning),

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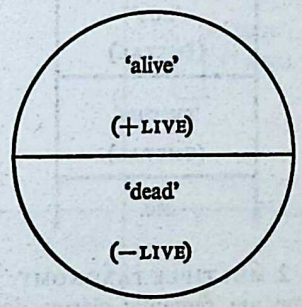
whereas in judging the sentences in a frame of mind appropriate to truth value (i.e. whether they are true or false), he would be unlikely to let associative differences obscure the point at issue: namely, whether (a) could be false while (b) was true, or whether (b) could be false while (a) was true.

Taxonomic Oppositions

The three examples of semantic opposition so far given are all of one type: there are two terms to the opposition, and the contrast between them is absolute, like a territorial boundary. This type of opposition may be called a *binary taxonomy* (the term 'taxonomy' indicating an arrangement of categories), and we might visualize it in the form of the accompanying diagram:



1. BINARY TAXONOMY

The absoluteness of the boundary needs explanation. It might be pointed out that in objective, physical terms, there is no clear-cut opposition between life and death; that there are even verbal strategies which allow us to point out the fuzziness of the borderline (e.g. we can say *In a technical sense he was alive, but for all practical purposes he was dead*). But the point is that in general, language behaves as if it were an absolute distinction. We observe, for example, in terms of logical consequences that

'The dead animal was still alive'
'John is both alive and dead'
'John is neither alive nor dead'
} are contradictions

'John is alive' is inconsistent with 'John is dead'
'John is dead' entails 'John is not alive'
'John is alive' entails 'John is not dead'.

(Again, it must be emphasized that the native speaker's instinct, in

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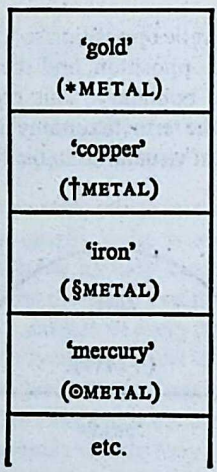
meeting sentences expressing the above contradictions, would be to force some sensible interpretation out of them, e.g. by semantic transfer. But this does not affect the principle at issue.)

Not all oppositions are of this type; in particular, although languages seem to operate largely with binary contrasts, there are oppositions which involve more than two terms, and which may be called *multiple taxonomies*.



2. MULTIPLE TAXONOMY

Examples of this type are semantic classes dealing with types of metal, species of animal, or tree, or fruit, etc., primary colours, noises ('bang', 'crash', 'clatter', etc.) and types of vessel ('vase', 'mug', etc.). Here, as with binary taxonomies, the absoluteness of boundaries may be justified in logical terms, for example by the contradictoriness of a statement like 'This copper jug is made of silver'. But again, the language often has, at a more delicate stage, devices for indicating the shading off of one category into another. Thus despite the contradictoriness of 'This red book is brown', we have compound adjectives like *reddish-brown* and *brownish-red* to indicate transitional shades. In the diagram, the asterisk, dagger, and other symbols for distinguishing one component from another are purely arbitrary: all that is needed is some graphic cipher or other for marking the separateness of each.

Polar Oppositions

If semantic oppositions are not all binary, neither are they all taxonomic.

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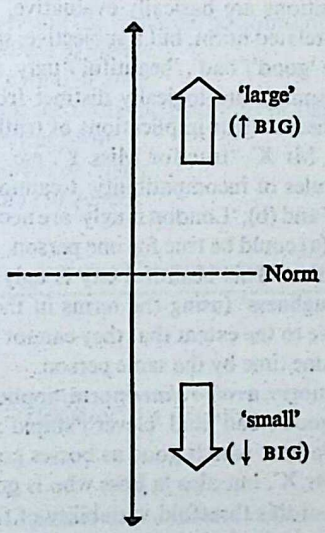
Many binary contrasts, such as those expressed by the antonym pairs *rich/poor*, *old/young*, *deep/shallow*, *large/small*, etc., are best envisaged in terms of a scale running between two poles or extremes. Points on the scale can be roughly indicated, where required, by more delicate contrasts, e.g. between 'quite rich' and 'very rich'. Once more, the visual analogy is paralleled by logical characteristics, which point to differences between this type of opposition and binary taxonomies. Notice, for instance, that while the contradictoriness of *'This rich man is poor' and *'John is rich and poor' is just as definite as that of *'This dead man is alive', there is an important distinction between the deviance of *'This man is neither alive nor dead' and the acceptability of 'This man is neither rich nor poor', which shows that a polarity can accommodate a middle ground belonging neither to one pole nor to the other.



3. POLARITY

This middle ground implies the existence of a norm – and it is important to observe that the norm is *object-related* – that is, it can shift its position on the scale according to the object being categorized. For example, in terms of physical measurement, *young* does not mean the same in the phrase *young man* (aged seventeen to thirty?) and *young archbishop* (aged forty-five to sixty?). This relativity has curious logical consequences. With ordinary taxonomic features it is possible to make connections like the following, based on hyponymy:

'Xerxes is an alsatian' entails 'Xerxes is a dog.'

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Therefore

'Xerxes is an adult alsatian' entails 'Xerxes is an adult dog.'

But the same inference cannot be made without hazard when the adjective expresses a feature of a polarity:

'Xerxes is a small alsatian' does not entail 'Xerxes is a small dog.'

Similarly, from the tautological character of 'An alsatian is a dog', one can draw the conclusion that 'An adult alsatian is an adult dog' is also a tautology; but not that 'A small alsatian is a small dog' is a tautology. The explanation is clearly that if the norm for a sub-species is different from that for the species as a whole, there is no guarantee that the hyponymic relationship is maintained. 'A small dog' means more fully 'A dog that is *small for a dog*', while 'A small alsatian' means 'an alsatian that is *small for an alsatian*'.

Some polar oppositions are basically evaluative, and for them there is not only an object-related norm, but a subjective, *speaker-related* norm as well. They include 'good'/'bad', 'beautiful'/'ugly' and 'kind'/'unkind'. These evaluative meanings are logically distinct from other polarities, because we cannot discuss their implications of truth value without distinguishing 'true for Mr X', 'true for Miss Y', etc. Hence they involve a relaxation of the rules of incompatibility: I cannot maintain that (a), 'London is beautiful' and (b), 'London is ugly' are necessarily inconsistent statements, because (a) could be true for one person, and (b) for another. But I can still hold that 'This beautiful city is ugly' is a contradiction, since 'beauty' and 'ugliness' (using the terms in their accepted senses) are mutually exclusive to the extent that they cannot be predicated of the same object at the same time by the same person.

Yet a third type of norm, a *role-related* norm, applies to some evaluative polarities, such as 'good'/'bad' and 'clever'/'stupid': thus a 'good boss' may mean not only 'a boss who is good as bosses go' and 'a boss who is good according to Mr X', but also 'a boss who is good *at being a boss*'. It is largely because of this threefold variability of the norm that words such as *good* and *bad* are thought to be vague and shifting in their meanings.

Polar features of meaning are expressed not only through adjectives (*high*, *low*, etc.) but also through adverbs (*well*, *loudly*, *softly*, etc.), some nouns (*fool*, *pauper*, etc.), verbs (*love*, *hate*, *agree*, etc.), and determiners (*a few*, *many*, *a little*, etc.). In this book I shall symbolize the terms of a polar opposition by vertical arrows: ↑GOOD, ↓GOOD, etc.

Relative Oppositions

A further important type of binary opposition, a RELATION, involves a

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contrast of direction. Examples are: 'own'/'belong to', 'be in'/'contain', 'up'/'down', 'above'/'below', 'before'/'after', 'left'/'right', 'west'/'east', 'parent'/'child', 'teacher'/'pupil', etc. Relations cannot be considered apart from the two entities which they relate, which we may call, anticipating Chapter 8, ARGUMENTS.* The contrast between two relative features consists in the fact that the two arguments (*a* and *b* in the diagram) may be related either in one order or in another. In form, the contrast may be expressed either by a different syntactic order, or by a different lexical item (with or without a change of syntactic construction). Thus the contrast between

a	→PARENT	*b*

and

b	→PARENT	*a*

can be realized *either* by keeping the same lexical item and reversing the syntactic positions of the arguments:

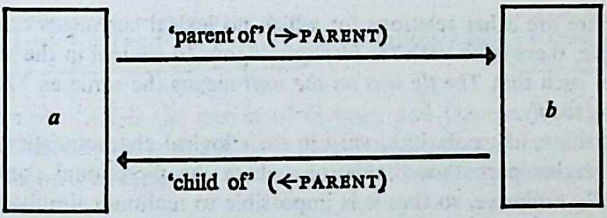
(1) *John is the parent of James.*

(2a) *James is the parent of John.*

or (often) by keeping the syntactic positions of the arguments constant, and changing the lexical form:

(1) *John is the parent of James.*

(2b) *John is the child of James.*



4. RELATION

Lexical pairs such as *parent* and *child* are called *converses*. Because of these alternative ways of expressing the same contrast, there arise cases of synonymy like:

(1a) *John is the parent of James*
is synonymous with (1b) *James is the child of John.*

(2a) *James is the parent of John*
is synonymous with (2b) *John is the child of James.*

If 'parent' is represented by →PARENT and 'child' by ←PARENT, it seems, then, that we have four different formulae representing only two different meanings:

*Note that the term 'argument' is used here in a logical or mathematical sense which has little to do with the everyday sense of the term.

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(1a) | *a* | →PARENT | *b* | = (1b) | *b* | ←PARENT | *a* |

(2a) | *b* | →PARENT | *a* | = (2b) | *a* | ←PARENT | *b* |

But it will be remembered that one of the conventions of our notation is that linear order of symbols is not distinctive. A natural extension of this principle is to say that in relational formulae such as those above, sequences which are mirror-images of one another represent the same meaning. In the light of this *mirror-image convention*, the notation as it stands shows what we want it to show: that (1a) is synonymous with (1b), and (2a) is synonymous with (2b).

The synonymy of these pairs of sentences can be matched by many other examples, such as:

My uncle owns this car
is synonymous with *This car belongs to my uncle.*
The green car was in front of the red bus
is synonymous with *The red bus was behind the green car.*
An oak chest contained all the family heirlooms
is synonymous with *All the family heirlooms were in an oak chest.*

But there are other relations for which no lexical converses exist. For example, there is no verb **to blep* (analogous to *contain* in the sentence above) such that *The fly was on the wall* means the same as **The wall blepped the fly.*

Relations, like polarities, vary in their logical characteristics. Many are like the 'parenthood' relation, where the directional contrast is mutually exclusive, so that it is impossible to maintain simultaneously that 'Alf is parent of George' and 'Alf is child of George' (assuming, as ever, that Alf and George are the same people in both propositions). Using →R/←R to represent any relative opposition, and *a* and *b*, as before, to represent any pair of arguments, we may sum up this condition in the rule:

| *a* | →R | *b* | is inconsistent with | *a* | ←R | *b* |

This type of relation, in logical terminology called *asymmetric*, shows the principle of incompatibility operating in the same absolute way for relative oppositions as for taxonomic oppositions. But there is also an opposite kind of relation, a *symmetric* relation, for which the following holds:

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a	$\rightarrow_R$	b	entails	a	$\leftarrow_R$	b

e.g. 'John is married to Susan' entails 'Susan is married to John'. Here the contrast of meaning is effectively neutralized. Other relations are neither symmetric nor asymmetric. 'John loves Susan' neither entails nor is inconsistent with 'Susan loves John'; it is a matter of factual circumstance whether, for a given pair of people, the relation of 'loving' is reciprocal. Hence only where a relative opposition is asymmetric does it define a relation of incompatibility.

Other logical attributes of relations are *transitivity* and *reflexivity* and their diametric opposites *intransitivity* and *irreflexivity*. *Transitivity*, in logical terms, is defined by the rule:

a	$\rightarrow_R$	b	and	b	$\rightarrow_R$	c	entails	a	$\rightarrow_R$	c

For example, 'The king is in his counting house and his counting house is in his castle' entails 'The king is in his castle.' The relation expressed by *in* is thus transitive, as indeed most spatial relations are. *Intransitivity*, on the other hand, is defined by the rule:

a	$\rightarrow_R$	b	and	b	$\rightarrow_R$	c	is inconsistent with	a	$\rightarrow_R$	c

For example, 'Alf is the parent of George, and George is the parent of Ike' is inconsistent with 'Alf is the parent of Ike'. Again, many relations belong to neither category: the relation of 'loving' is neither transitive nor intransitive.

Relations which are invariably capable of linking an argument to itself are called *reflexive*. That is, for all reflexive relations, it is true to say '$a \rightarrow_R a$ is a tautology'. For example, 'Jack is *as old as* himself' is a tautology. If the opposite is the case, that is, if $a \rightarrow_R a$ is a contradiction, then the relation is classified as *irreflexive*. For example, 'Jack is *in front of* himself' is a contradiction.

The particular combination of asymmetricity, transitivity, and irreflexivity is common to a large number of relations in natural language (e.g. 'above'/'below', 'before'/'after', 'ancestor'/'descendant'), and so it is worth while having a special name for it: we may call such oppositions

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ordering relations, because they place the arguments in an irreversible order in respect to the dimension of meaning concerned. Another important class is made up of those relations having the properties of symmetry and reflexivity ('opposite', 'near to', 'be married to', 'similar to', etc.), which we may call *reciprocal* relations. As the directional contrast is in effect neutralized in reciprocal (and other symmetric) oppositions, it is useful to symbolize them by means of a double-headed arrow, to show that the relation operates in both directions at once: ↔MARRY, ↔NEAR, etc. Other relations can be symbolized by single-head arrows: →PARENT, ←PARENT.

Relative features of meaning are most often expressed by verbs ('own'/'belong') or prepositions ('over'/'under') or conjunctions ('before'/'after', 'while', 'because'/'so that'). But in comparative constructions, adjectives and adverbs, too, have relative meaning. Unequal comparisons (e.g. 'greater than'/'less than') have the character of ordering relations, as we notice from the following:

'Clive is taller than Bill' is inconsistent with
'Bill is taller than Clive.'
'Clive is taller than Bill, and Bill is taller than Susan' entails
'Clive is taller than Susan.'
'Clive is taller than himself' is a contradiction.

Also, the comparative forms of antonymous adjectives and adverbs are converses:

Clive is taller than Bill
is synonymous with *Bill is shorter than Clive.*

Other Types of Opposition

Other, less common types of semantic opposition include *hierarchic* oppositions (here symbolized by numerals, e.g. 1 LENGTH, 2 LENGTH, 3 LENGTH, etc.), which are like multiple taxonomies, except that they include an element of ordering.

Examples are sets of units of measurement ('inch'/'foot'/'yard', etc.), and of calendar units such as months of the year ('January'/'February'/ etc.), as well as the most fundamental hierarchy of all, that of number ('one'/'two'/'three'/etc.), which is open-ended, in that it has no 'highest' term. Terms of hierarchies are categorically exclusive like those of taxonomies, so that it is possible to derive from them contradictions and relations of inconsistency:

'Last Monday was a Tuesday' is a contradiction.
'Yesterday was a Sunday' is inconsistent with
'Yesterday was a Monday.'

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In other respects, hierarchies relate to polar relative oppositions; they obviously have to do with ordering and scalar positions, and this means that we can generate from them special classes of tautologies, contradictions, etc., such as:

'Monday was the day before last Tuesday' is a tautology.
'An inch is longer than a yard' is a contradiction.

The 'days of the week' opposition belongs to a special kind of hierarchy we may call *cyclic*, which has no first or last member, because for any two terms *a* and *b* of the hierarchy, it is possible to assert that *a* both precedes and follows *b*. 'Monday came before Friday' and 'Friday came before Monday' are both tautologous if we interpret 'before' in the more general sense, rather than in the narrow sense 'directly before'.

Last of all, there is an interesting type of binary semantic contrast, here called an *inverse opposition*, between such pairs as 'all'/'some', 'possible'/'necessary', 'allow'/'compel', 'be willing'/'insist', 'remain'/'become', 'still'/'already'. To visualize this relationship, we may imagine a football pitch bounded by two goal-lines, A and B. The whole terrain *in front of* goal-line A is one term of the opposition (say △ POSSIBLE), while the whole terrain *behind* goal-line B is the other term (▽ POSSIBLE). The negations of the respective terms define complementary areas.

The main logical test for an inverse opposition is whether it obeys a special rule of synonymy which involves (a) substituting one inverse term for another, and (b) changing the position of a negative in relation to the inverse term. For example:

(1) *SOME countries have NO coastline* is synonymous with
NOT ALL countries have a coastline.
(2) *ALL of us are NON-smokers* is synonymous with
NOT ANY of us are smokers.

This illustration exemplifies the most important inverse opposition of all, that of *quantification*, which is represented by the positive terms 'all' and 'some', and the negative terms 'not all' and 'not any' (= 'none'). The semantic elements 'all' and 'some' are known respectively as the *universal* quantifier and the *existential* quantifier. (There is further discussion of quantification on pp. 171–6. The following are further illustrations of the rule of synonymy which applies to inverse oppositions:

'We were *compelled* to be *non*-smokers' =
'We were *not allowed* to be smokers' ('allow'/'compel')
'It is *possibly not* true that Jack is a hippy' =
'It is *not necessarily* true that Jack is a hippy' ('possible'/'necessary')

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'The prisoners *insisted* on *not* eating their food' =
'The prisoners were *not willing* to eat their food'
('willingness'/'insistence')

'John did *not become* a smoker' =
'John *stayed* a *non*-smoker' ('become'/'stay')

Conclusion

We have now seen that the phenomenon of 'semantic contrast' on which componential analysis is based is much richer and more varied than was apparent in the first simplified examples. While illustrating these various types of opposition, I have tried to show how their logical consequences (in terms of entailment, contradiction, etc.) differ from type to type, and therefore provide the motive for recognizing and defining the different types in the first place. By 'definition' here, indeed, I mean precisely stating the special conditions for entailment, inconsistency, etc., that apply to each type: the diagrams are no more than rough visual metaphors for these. Some of the special rules show interconnections between the different types; for instance, the tautology 'A tall man is taller than a short man' involves a connection between a polar opposition ('tall'/'short') and a relative opposition ('taller than'/'shorter than'). It might in fact be claimed that all types illustrated here could be ultimately reduced to one or two basic types – perhaps to just taxonomic and relative oppositions. For example, it has been argued (Bierwisch, 1970) that polar meanings should be explained in terms of relative meanings: e.g. that 'John is tall' should be analysed in comparative terms as 'John is taller than X, where X is the relevant norm'. Then the tautology 'A tall man is taller than a short man' could be derived directly from the transitivity of the 'taller than'/'shorter than' relation, without the need to introduce a special rule. The proof goes roughly like this:

'*a* is tall' = '*a* is taller than X, where X is the relevant norm'.
'*b* is short' = '*b* is shorter than X, where X is the relevant norm'.
= 'X is taller than *b*, where X is the relevant norm'.
Therefore '*a* is tall, and *b* is short' =
'*a* is taller than X, and X is taller than *b*',
which entails (by transitivity)
'*a* is taller than *b*'.

The difficulty is that the more one tries to reduce one sort of opposition to another in this way, the more complex and problematic becomes the task of relating semantic structure to syntactic structure – something

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which the linguist, because he sees semantics as only part of linguistic description, must take fully into account. The advantage of componential analysis is that it permits a generally straightforward account of the relation between words and structures of meaning. Moreover, there is no reason to suppose that semantic contrasts between such word-pairs as *tall* and *short* are any more complex, in terms of cognitive processing, than the contrasts between *male* and *female*, *before* and *after*, etc. My expectation is that the simplest account of vocabulary structure will be one which treats all these semantic oppositions as functioning at the same level.

For this reason, as well as for ease of reading formulae, I have incorporated into the notation different feature symbols for each category of opposition, and it will be useful at this stage to list illustrations of these by way of summary:

1. BINARY TAXONOMY
   + LIVE ('alive')
   − LIVE ('dead')

2. MULTIPLE TAXONOMY
   *METAL ('gold')
   †METAL ('copper')
   §METAL ('iron')
   ⊙METAL ('mercury')
   etc.

3. POLARITY
   ↑BIG ('large')
   ↓BIG ('small')

4. RELATION
   →PARENT ('parent')
   ←PARENT ('child')

5. HIERARCHY
   1LENGTH ('inch')
   2LENGTH ('foot')
   3LENGTH ('yard')
   etc.

6. INVERSE OPPOSITION
   △POSSIBLE ('possible')
   ▽POSSIBLE ('necessary')

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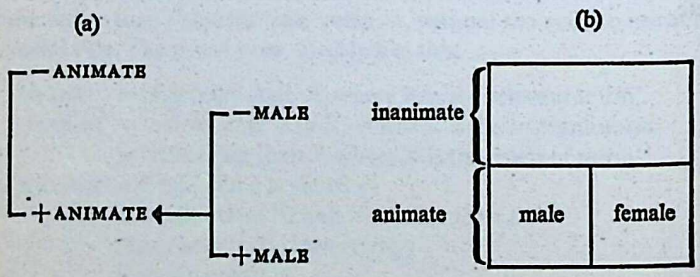
7. Componential Analysis: Extensions and Problems

We still have a crude and incomplete picture of how word-meanings are structured. In this chapter I shall develop componential analysis further, and discuss some of the problems which it raises.

Redundancy Rules

The question we shall consider first is how the features of different semantic oppositions can be combined. The most elementary hypothesis to hold would be that every dimension of meaning is variable, completely independently of all the other dimensions. But this view would be too simple. We have seen that the three dimensions ±HUMAN, ±ADULT, and ±MALE are independently variable in this way. But what about dimensions like ±ANIMATE and ±COUNTABLE? Plainly it makes no sense to combine either of the features +MALE or −MALE with −ANIMATE ('inanimate') or −COUNTABLE ('mass'). An 'inanimate male' object is just as much a contradiction in terms as a 'female male' object: or to look at the matter in a more positive light, both features +MALE and −MALE presuppose the presence of the feature +ANIMATE. We can symbolize this dependence through a tree diagram like (a), or through a field diagram like (b):



Or more explicitly we may formulate such a relationship through a *Redundancy Rule* which may be expressed as follows:

±MALE requires +ANIMATE

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(i.e. if +MALE or −MALE is present in a componential formula, then +ANIMATE is also).

The effect of this rule is to add the feature +ANIMATE automatically to any formula in which the feature +MALE or −MALE occurs. By this means we can account for the fact that a combination like 'female book' seems just as much a violation of semantic rule as 'female man':

−MALE −ANIMATE ... [+ANIMATE]	'female book'
−MALE +HUMAN +ADULT +MALE	'female man'

Overtly, the componential meaning 'female book' does not contain a clash of features comparable to that of +MALE and −MALE in 'female man', but when we add the feature +ANIMATE (put in square brackets to show that it is supplied by a redundancy rule), this brings to light a clash between −ANIMATE (implicit in the definition of *book*) and +ANIMATE. Redundancy rules are so called because they add features which are predictable from the presence of other features, and are therefore in a sense redundant to an economical semantic representation. Such rules are also found in phonology and syntax. Covert, indirect relations of incompatibility and hyponymy can also be established through redundancy rules: for example, the meanings 'man' and 'book' are indirectly incompatible, and hence 'X is a book' and 'X is a man' are inconsistent statements. In this way, redundancy rules are important for extending the power of componential analysis to account for basic statements.

The interrelations between oppositions of meaning through these rules can be quite complex. On the next page is a very rough and incomplete sketch designed to show how the three oppositions ±HUMAN, ±ADULT, and ±MALE might fit into a general dependence network of taxonomic oppositions dealing with concrete objects.

It must be emphasized here, as before, that the semantic oppositions and their interrelations need not reflect categories of scientific and technical thought: we are concerned with the 'folk taxonomy' or everyday classification of things that is reflected in the ordinary use of language. There are many instances where folk taxonomies involve what a scientist would consider a misclassification: in the past history of English, for example, the word *worm* has been applied to both worms and snakes, and the word *fish* has been applied to whales. One of the difficulties of trying to arrive at a 'folk taxonomy' for present-day English is the interference to varying degrees of technical taxonomies (e.g. the biological taxonomy in terms of classes, orders, genera, species, etc.) in the ordinary

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non-specialist use of language. Technical taxonomies are more highly structured than folk taxonomies.

The diagram shows how, through redundancy rules, great economies can be made in the definition of words, and yet one can still show their interrelation with many other words. According to the diagram, for example, it is sufficient to define *spaniel* by one feature (□BREED). All the other features of its meaning (†SPECIES, *KIND, −HUMAN, +ANIMAL, +ANIMATE, lPENETRABLE, +COUNTABLE, +CONCRETE) are predictable by redundancy rules.

The diagram also points out how certain features and oppositions can be regarded as more important than others in the total organization of the language. The oppositions ± CONCRETE and ± COUNTABLE have many oppositions dependent on them (either directly or indirectly), and therefore have key positions at the head of the taxonomic 'tree'. The feature + ANIMATE is also important, as a component on which quite a number of semantic choices depend.

Marked and Unmarked Terms

Binary oppositions frequently have a MARKED term and an UNMARKED term: that is, the terms are not entirely of equivalent weight, but one (the unmarked one) is neutral or positive in contrast to the other. Early studies of markedness focused on overt morphological or lexical marking. For instance, in English, as in other languages, the plural is the marked category of number, because we have a special noun suffix for marking the plural, but not for the singular: *book/books*. In French, the feminine is typically marked in contrast to the masculine (*petit/petite*), but if sex is marked in English it is generally marked lexically, by the existence of a special word for one sex, but not for the other; e.g., for ducks, maleness is marked by the word *drake*, but femaleness is unmarked, because the word *duck*, which refers to the female, also does service for the species as a whole. The opposite marking, however, is found in the pronouns *he* and *she*:

No one in *his* senses would do a thing like that.
No one in *her* senses would do a thing like that.

It is the male pronoun here which is unmarked, because *No one in his senses* could refer to people of either sex, whereas *No one in her senses* would apply to female persons only. (Those who deplore the masculine bias of this can avoid the problem of marking by replacing *his* by *his or her*, *her or his*, or even by *their*.)

A similar kind of marked/unmarked distinction is found in polar

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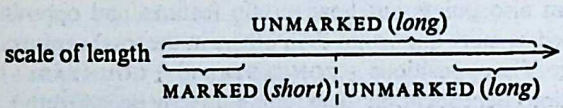
oppositions such as *long/short*, *high/low*, *old/young*: we measure things by *length* rather than *shortness*, and say *This carpet is ten feet long* rather than **This carpet is ten feet short*. When we ask questions about length, we say *How long is that rope?* rather than *How short is that rope?* A question *How short is X?* is felt to contain the assumption that *X* is short, while no equivalent assumption is present in *How long is X?* That is, if the two antonyms contrast with reference to a scale of measurement, the unmarked one is capable of referring to any point on that scale, thereby neutralizing the contrast:



But the marked/unmarked bias does not rely on a regular scale of measurement; it can apply also to cases like:

How *well* does he speak Russian? Very poorly.
How *badly* does he speak Russian? *Like a native.

The second of these exchanges is distinctly odd in comparison with the first, because *badly* is the marked term in this contrast, and so anticipates a very different answer from the one given.

Markedness is superficially definable as a relation between form and meaning: if two forms (e.g. words) contrast on a single dimension of meaning, the unmarked one is the one which can also apply neutrally to the whole dimension. But it seems that this phenomenon is due to a positive–negative bias inherent to the semantic opposition itself. Often the marked term is indicated by a negative prefix or suffix (*happy/unhappy*; *polite/impolite*; *useful/useless*; etc.). In other cases there is a covert element of negation: for example, it is easier to paraphrase *dead* by *not alive*, than *alive* by *not dead*. Experiments have shown (see Clark and Clark, 1977, pp. 455–6) that people respond more quickly to unmarked than to marked terms. A deeper explanation of markedness would therefore postulate psychological or experiential motivations for the imbalance. For example, psycholinguists have proposed a so-called 'Pollyanna hypothesis' that people tend to look on the bright side of life, which would explain a tendency for words with 'good' evaluations to be unmarked, and those with 'bad' evaluations to be marked.

There is also a factor of bias in relative oppositions, but this might better be described as 'dominance' rather than 'markedness'. In *parent/child*, *above/below*, *in front/behind*, *own/belong to*, it is the first term which seems to express the *dominant direction* of the relation, so that in talking of the relation in general, we prefer to place the dominant term before

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the other (as in *the parent–child relationship*) or to use the dominant term only (as in *ownership*). Most prepositions and verbs which express relations do not have a converse term at all (e.g., *see*, *hit*, and *have* are not matched by converse verbs meaning 'be seen by', 'be hit by', 'be had by'). This is perhaps the most powerful indicator of directional bias.

Markedness and dominance vary in strength, and are also subject to contextual influences. In some cases the bias is weak, if not non-existent; perhaps this is true of examples like *left/right* and *light/dark*. But in general these inequalities between the terms of an opposition seem to have a real psychological basis.

Should markedness be reflected in Signese, the notation of componential analysis? I have proposed (p. 90) that there is no *logical* significance in the assignment of symbols to the terms of an opposition. The distinction between 'alive' and 'dead' could equally well be captured in Signese as − DEAD/ + DEAD as by + LIVE/ − LIVE, in that the logical consequences of these notations are equivalent. But although the choice is logically arbitrary, psychologically it is significant, and I have acknowledged this tacitly by assigning to oppositions symbols which allude to the *un*marked or dominant term. This has meant that the unmarked term has received the discriminator + or ↑, and that the dominant term of a relation has received the rightward arrrow →. If I had not done this, the notation would have certainly been more difficult to understand. But there is a further advantage in establishing this convention for indicating markedness: *the notation can be simplified, when we wish, by the omission of the distinguishing symbol for the unmarked or dominant term*. By this convention, the following become notational variants:

ANIMATE = +ANIMATE; GOOD = ↑GOOD; PARENT = →PARENT

But the distinguishing symbol for the marked term (− ANIMATE, ↓GOOD, ←PARENT) is never omitted; and the neutralization of the opposition can still be indicated, where required, by a zero: OANIMATE, OGOOD, OPARENT, etc.

This simplification is not just a superficial matter of convenience; it no doubt reflects an economizing function which markedness performs in the psychological processing of meaning. It is easier to make a choice between two alternatives if we operate with a 'default' principle that one of these alternatives will always be chosen unless there are specific indications to the contrary. This principle can be illustrated with traffic signs. A red-and-green traffic light operates a binary taxonomy with two distinct signals. But most other road signs assume an unmarked term. For example, a 'No Entry' sign does not contrast with an 'Entry' sign: we assume, without a sign to the contrary, that entry is permitted.

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This 'default' convention results in a phenomenal saving in traffic signs, and, more importantly, enables the motorist to concentrate more on driving and less on sign-reading.

Ruth Kempson (1980, p. 15) has proposed a rule to account for lexical ambiguities arising from markedness. For the present purpose, this rule may be formulated as follows (and we may take *dog* and *bitch* as examples of its application):

IF (a) there are two words W_1 and W_2 with the meanings m_1 and m_2, such that m_2 differs from m_1 only in containing an extra feature $-X$,

AND IF (b) there is no word W_3 with the meaning m_3 such that m_3 differs from m_2 only in containing the feature $+X$,

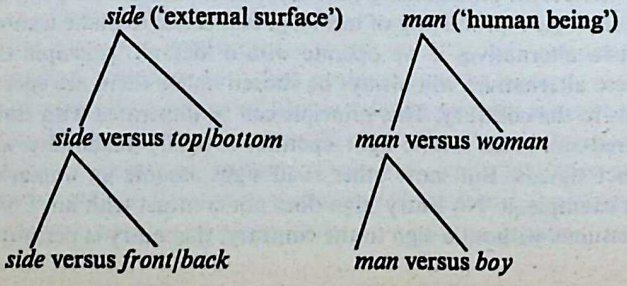
THEN (c) W_1 has the additional meaning m_3.

[*Explanation*: m_2 and m_3 are co-hyponyms of m_1, and W_1 is the unmarked term.

Example: W_1 = dog; W_2 = bitch; m_1 = †SPECIES; m_2 = †SPECIES −MALE; there is no distinct word for m_3 (= †SPECIES +MALE), therefore *dog* means m_3, as well as m_1.]

This appears to be a general rule, applying not only to *dog* and *bitch*, but to examples like *man* and *woman*, *duck* and *drake* (but in this case the markedness is the other way round, so we write +FEMALE/−FEMALE), *rectangle* and *square*, *line* and *curve*, *food* and *drink*, *house* and *bungalow*, and many others. In each of these pairs, the first noun has the more general meaning, but also has a more specific meaning which contrasts with that of the second noun.

Such ambiguities account for the fact that, on the one hand, it is tautologous to say *A calf is a young cow*, and, on the other hand, it is not contradictory to say *That's a cow, not a calf*. Notice that the same word can enter into two or more ambiguities of this kind: *cow* is the unmarked term with respect to *calf* on the one hand, and to *bull* on the other. We can even find hierarchies of meanings for the same word:



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However, Kempson's rule does not account for all ambiguities of this kind: the example of *side* (see pp. 127–8) does not quite fit the rule, because there is no single word meaning 'top-or-bottom' or 'front-or-back' with which *side* contrasts.

Criticisms and Problems of Componential Analysis

Componential analysis as a theory of word-meaning is controversial. While many have found it a useful and revealing technique for demonstrating relations of meaning between words, others have criticized it. Since I belong to the former group, the reader would benefit from reading a less favourable view, for example that of Lyons (1977, pp. 317–35). My task now is to consider some of the criticisms that have been made. (CA = componential analysis.)

1. It is often said that CA accounts for only some parts of a language's vocabulary (specifically those parts which are neatly organized). If we restrict ourselves to too simple a concept of CA (e.g., if we assume that all oppositions are binary taxonomies), this is certainly true. I have tried to show, however, how CA can be enriched to deal with a much wider range of vocabulary. Even so, the principle that CA could deal with the *whole* vocabulary of a language is felt to be implausible. To account for the immense open-ended expressive power of language, would we not need an infinite number of oppositions? I accept the force of this objection, but rather than throw out CA because of it, I aim to show that CA can be fitted into a more powerful model of meaning, with additional levels of analysis apart from CA. I shall also argue (on pp. 144–5) that semantic features need not be the atomic contrastive elements we have dealt with in this chapter, but may have an internal structure of their own; i.e., that semantic features can be derived from configurations of other features. This recursive power of feature-creation is particularly important in considering metaphor and other kinds of meaning transfer (Chapter 11). Allowing for such possibilities, we need not postulate an indefinite proliferation of semantic oppositions.

2. It is often objected that CA suffers from a 'vicious circle' in that it merely explains one set of symbols (e.g., English words) by another set of symbols (which also often turn out to be English words). In explaining the function of the notation Signese, I have already argued that this is mistaken: the notation symbols are in principle arbitrary, and the explanatory function of features is solely their role in the prediction of basic statements.

3. Another objection is that CA postulates abstract semantic entities (semantic features) unnecessarily. It is sometimes compared unfavourably with another type of analysis which uses MEANING POSTULATES

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(first proposed for formal languages by Carnap – see Carnap 1956). These are rules which, like CA, account for relations of hyponymy and incompatibility, but, unlike CA, can be formulated to operate on the word-forms themselves. For example, one rule (which may be symbolized *man→human*) might postulate that 'For all *x*, if *x* is a man, *x* is a human'; another (*male→not female*) might postulate that 'For all *x*, if *x* is male, *x* is not female'. Although it is not clear how such meaning postulates deal with ambiguities and with oppositions other than binary taxonomies, they do seem equivalent to CA in explaining the simplest cases such as those dealt with on p. 90. Their major limitation is that they cannot be generalized from one language to another (unless we express them in a formal language rather than a natural language, in which case they become just as abstract as CA). If we state meaning postulates in terms of English words, we shall need the same postulates all over again for other languages (e.g., Italian: *uomo→umano*; German: *männlich→nicht weiblich*). The notation of CA, on the other hand, is language-neutral, and so the same features, oppositions, redundancy rules, etc., may explain meaning relations in many different languages.

4. In this connection, another criticism has been made of CA: that it postulates universal features of meaning, and therefore relies upon the strong assumption that the same semantic features are found in all languages. Although some proponents of CA have taken a strong position on universals, this is by no means a necessary part of the model. On the contrary, CA fits in well with a 'weak universalist' position (see p. 232), whereby semantic oppositions are regarded as language-neutral, i.e. as conceptual contrasts which are not necessarily tied to the description of particular languages. According to this view, which I adopt, semantic analyses may be generalized from one language to another, but only to the extent that this is justified by translation equivalence.

5. It has also been claimed that CA is unexplanatory in that it does not provide for the interpretation of semantic features in terms of the real-word properties and objects that they refer to. For example, +ADULT remains an abstract, uninterpreted symbol unless we can actually specify what adults are like, i.e. how we decide when the feature +ADULT refers to something. To expect CA to provide an interpretation in this sense is to expect it to provide a theory not only of MEANING, but of REFERENCE; or, to put it in the terms of Chapter 2, not only of conceptual meaning, but of connotative meaning. But I have already argued that CA cannot have this wider goal: it is meant to explain word sense, not the encyclopedic knowledge which must enter into a theory of reference.

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A psychologically realistic theory of reference must explain criteria of reference in terms of the prototypic categories discussed on pages 84–6. Just as one decides the reference of the feature †SPECIES 'dog' by comparing objects with a mental prototype (a 'standard dog') in terms of criteria of variable strength, so one decides the reference of the feature +ADULT by applying certain criteria such as sexual maturity, age, and social status. In some cases the boundaries of such categories are clear-cut (e.g., when we define 'adulthood' technically in terms of the legal coming-of-age). But in other, perhaps more typical cases, the boundaries are fuzzy: there is no determinate point of time at which we decide that a person or animal has reached adulthood – when we decide, for example, to call a young person a *woman* rather than a *girl*. This is to suggest, then, that features name categorial 'wholes', just as words do. If we want to study the make-up of these categories, in terms of criteria of reference, we are moving into a different, open-ended area of investigation which might in an indirect sense be considered part of the study of meaning, but is not part of the central study of word-sense with which CA is concerned.

6. This provides an answer to a further criticism of CA: that CA simply does not account for the nature of word-meanings, which are looser, fuzzier, more inconsistent, than CA implies. This impression of fuzziness comes in the main from the fuzziness of prototypic categories, rather than from the relations between those categories, which is the domain of CA. However, since this is the weightiest objection to CA, provoking a reassessment of the whole nature of word-meaning, I shall now give it more extended consideration.

'Fuzzy Meaning'

The view that word-meanings are essentially vague, that determinate criteria for the reference of words cannot be given, has received prominent support both in philosophy and linguistics. It is well known that Wittgenstein exemplified this with the word *game*: he could find no essential defining features of what constitutes a 'game' and concluded that we know what the word *game* means only by virtue of recognizing certain 'family resemblances' between the activities it refers to. Also well-known is a more recent critique of the deterministic view of meaning by Labov (1973), who conducted an experiment in which subjects were invited to label pictures of more-or-less cup-like objects. He found that although there was a core of agreement as to what constituted a cup, there was also a peripheral gradient of disagreement and uncertainty. Other studies have reached the same conclusion that meaning is fuzzy.

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For example, in deciding whether to call something a cup, we may take into account various attributes or reference-criteria: e.g., whether the object has a handle, has a saucer, is narrow and deep rather than wide and shallow, is used for drinking out of, etc.; but some of these criteria are scalar, and some are more important than others. The conclusion, then, is that *cup*, *mug*, *bowl*, and similar words are defined in terms of 'fuzzy sets' of attributes; that is, in terms of a set of attributes of varying importance, rather than in terms of a clear-cut, unvarying set of features.

However, these problems of defining *games* and *cups* are basically those which have already been discussed in connection with prototypic categories. The result of Labov's experiment is readily compatible with the hypothesis that we match candidates for 'cuphood' against a prototype, or standard notion of a cup. This kind of vagueness is referential vagueness and does not, I have argued, affect CA, because it has to do with category recognition: the mental encyclopedia rather than the mental dictionary.

There is another kind of variability of reference which is more damaging to CA. Lyons (1977, p. 334) points out that if we analyse the three words *boy*, *girl*, and *child* in terms of a common feature −ADULT, this feature will require different interpretations in the three cases. *Male child* and *boy* are not necessarily synonymous, and the distinction between *boy* and *man* is drawn rather differently from that between *girl* and *woman*; for example, the age-range for calling someone a *girl* overlaps considerably with that for calling someone a *woman*. These observations seem to strike at the basis of CA because a CA analysis assumes that features are invariable: it predicts in this case that 'John is a male child' is synonymous with 'John is a boy', and that 'Mary is a girl' is incompatible with 'Mary is a woman'. But if −ADULT names a prototypic category, the prototype should not shift according to what other features (e.g., of sex) this feature is combined with.

A defence of CA on this score runs as follows. The situation with *boy* and *girl* is not all that different from the one which arises with animal species. Obviously one recognizes adulthood in bees, hamsters, human beings, tortoises, etc., in different ways: age, biological characteristics, behavioural characteristics, etc., will vary widely from one species to another. But rather than reject the notion of adulthood as hopelessly variable and vague, we can say that the common ground, in such cases, is found by identifying more abstract criteria, e.g. sexual maturity, reaching a maximum state of physical development. Applying the same lesson to human beings, we notice that even more abstract criteria may be involved, in particular social factors such as being economically independent of one's parents, taking adult responsibilities, etc. These

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criteria apply differently to the two sexes: boys seem to reach 'manhood' earlier than girls reach 'womanhood' not for biological reasons (which would argue in the opposite direction), but for social reasons. A male is considered to be independent of his parents as soon as he can 'look after himself' in the sense of living apart from his parents, earning his living, etc.; whereas, traditionally, a girl has been regarded as dependent on her parents until married. Marriage has thus been a more important criterion of adulthood for women than for men, and the prototype 'woman' has tended to be the mother-housewife, no longer the quarry of socially sanctioned sexual interest. The social history of terms referring to young female adults is complicated by taboo (their main characteristic, in a man's world, being *nubility* in both its senses), but at least it is easy to see how 'girl' has become extended, at the expense of 'woman', to people in this category. Traditional factors like these seem to account for the marked asymmetry in the use of *girl* and *boy*, in spite of the current movement towards sexual equality. The result is that the choice between *girl* and *woman* is far more subjective than that between *boy* and *man*. The general term *child*, on the other hand, is far more closely associated with physical and intellectual immaturity, so that teenagers are inclined to object to being called *children*. There is a case for saying that within the −ADULT category, there is a further binary taxonomy distinguishing 'child' from 'adolescent'. The general conclusion, however, is that the feature −ADULT stands up to scrutiny as a common factor in the meanings of *boy*, *girl*, *child*, *puppy*, etc.; but that its referential interpretation is variable, for reasons which are explicable in terms of the prototypic view of categories.

This makes us even more aware that componential analysis is not the whole story; but that it is part of the story, and a significant part, need not be doubted. There have emerged three different levels at which word-meaning may be analysed. Firstly, the *word-sense* as an entirety may be seen as a conceptual unit in its own right – what I earlier (p. 32) called a 'prepackaged experience'; secondly, this unit may be subdivided into components or *features*, by CA; and thirdly, both word-senses and features, representing prototypic categories, can be broken down into fuzzy sets of *attributes*. If this is more complex than the view of word-meaning with which we started, it is of a similar order of complexity to that of systems studied in natural sciences: physics, chemistry, biology, and astronomy all yield examples of system hierarchies (e.g. the planetary, solar, and galactic systems of astronomy), and it would perhaps be surprising if the complex mental phenomena of meaning were simpler than these.

To clarify this point, I shall adapt an analogy urged by Zwicky (1973)

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between semantics and chemistry. Semantic features are treated as 'semantic primes', the elementary irreducible elements of CA, just as atoms were long thought to be the irreducible constituents of matter. These features constitute word-meanings of varying complexity, just as atoms combine to form molecules. Word-meanings may be made up of just one atomic feature (like chemical elements), or of more than one (like chemical compounds). Furthermore, semantics has its sub-atomic particles: just as atoms are systems of protons, neutrons, and electrons, so the 'primes' of semantics are categories constituting systems of attributes. There are also repercussions between the systems. Elements occur with different masses in different environments: such isotopes (heavy hydrogen, for example) are like the different variants of the −ADULT feature which occur in different words. Elements also have valencies, which are like redundancy rules, determining the way in which one atom can combine with another to form molecules. Finally, word-meanings, like molecules, have 'emergent' properties, which are not predictable from the properties of their constituents, just as the properties of water cannot be predicted from those of hydrogen and oxygen.

The analogy is striking – and we may press it one stage further by comparing componential analysis with the 'classical' schoolbook chemistry which treats atoms as irreducible units. By isolating one system from the others, we cannot expect to get a perfect fit with the data; but componential analysis is a good enough fit to form a working model of the molecular structure of words.

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8. The Semantic Structure of Sentences

Componential analysis, the theme of the last two chapters, has developed as a technique for analysing the meaning of words. But now comes the question: 'How to describe the meanings of whole sentences?' It will be the task of the next two chapters to answer this question.

The simplest and most naïve hypothesis is that the meaning of a sentence is merely the sum of the meanings of the words and other constituents which compose it. But this is false. Firstly, we could not, if this were the case, tell the difference of meaning between *My wife has a new dog*, *My new wife has a dog*, *My new dog has a wife*, etc.: all these would have to be regarded as synonymous. In the second place, if componential analysis applied not only to words but to sentences as a whole, then a sentence like *The woman likes the puppy* would have to be regarded as meaningless: the features +ADULT in 'woman' and −ADULT in 'puppy' would contradict one another. Some linguists have worked towards a solution similar to this, but more sophisticated, and that is to set up special rules ('combinatorial rules' or 'projection rules') which amalgamate the meanings of sentence constituents in particular ways in order to produce the meanings of whole sentences.

But this whole approach, talking about semantics in terms of *words* and *sentences*, is in many ways a misleading one. Why should we attempt to describe meaning in terms of the categories of syntax, any more than we should attempt to describe syntax in terms of phonological categories like stress and intonation? So far as I know, no one has ever managed to make the *syllable* a useful category for the syntactic parsing of sentences, although there are clear correlations between syllabic structures and units like words. In the same way, I propose to stop trying to fit semantic analysis into the mould of units like nouns, verbs, etc., and instead to look for units and structures which operate on the semantic level. This is not to ignore that such semantic categories will have correlations with syntactic units; in fact, the simplicity of statable relations between syntax and semantics (see p. 86 and Chapter 10) is an important consideration in evaluating a semantic description.

Let us take componential analysis as our starting point. We have seen that componential analysis, the description of meanings in terms of

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combinations of contrastive features, can be applied to word-meanings, but not to the meanings of whole sentences. But this does not imply that the word is the upper limit of componential analysis. Consider, for example, the words which English has for identifying the young of animal species:

kitten: *SPECIES −ADULT
puppy: †SPECIES −ADULT
foal: □SPECIES −ADULT

(The componential definitions follow from the taxonomic diagram on p. 112.) It happens that for some types of animal (e.g. monkeys) we have no term for an ungrown member of the species. Does this mean that we have no means of expressing the idea of 'young monkey'? It certainly does not – I have just used the phrase *young monkey* to express that very idea. What we can say, rather, is that the combination of features #SPECIES −ADULT (where #SPECIES = 'monkey') is expressed in English by a phrase, instead of a single word. Similarly there is the possibility of synonymy between a word and a phrase (e.g. *lioness* and *female lion*) – or for that matter of translation equivalence between a word and a phrase (e.g. Latin *senex* and English *old man*) – a possibility which must be explained by giving the same definition, the same set of features, to each. The conclusion is that the semantic unit within which componential analysis applies is not only smaller than a sentence, but is potentially larger than the word.

Predications, Arguments and Predicates

For describing the meaning of sentences, as of words, a hierarchy of units is required. The major unit is what I shall call the PREDICATION. This is not identical to the proposition (see p. 79), but is rather the common category shared by propositions, questions, commands, etc. Consider the three sentences *The children ate their dinner*, *Did the children eat their dinner?* and *Eat your dinner, children!* Leaving aside differences of tense and pronouns, these sentences have a common content which can be expressed in a kind of Pidgin English: 'Children eat dinner'. It is this type of structure which I shall be considering under the name of 'predication', and with which we shall be occupied in this chapter. The difference between predications and propositions will be handled in Chapter 9, and will not be important at this stage.

On pp. 102–6 I illustrated how a proposition such as

(1) [My uncle] [⟶ owns] [this car]

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could be broken down into two ARGUMENTS (or 'logical participants'), 'my uncle' and 'this car', with a relational element linking them ('owns'). This linking element may be called, following logical rather than grammatical terminology, a PREDICATE. Rather as subject, verb, object, adverb, etc., are constituents of sentences, so argument and predicate are constituents of the predications expressed by sentences. Arguments (as in (1)) sometimes match syntactic elements like subject, verb and object, and sometimes do not. One has to avoid associating the 'predicate' in this sense with the 'predicate' of traditional grammar, and indeed, one must be wary of expecting these logico-semantic units to have any direct match with syntactic units. In (2) below, for example, the predicate is expressed by *was in front of*, which is not a single unit at all in a syntactic sense:

(2) [A tall woman] [was in front of →] [the car]

Assuming that all predications can be divided up into arguments and predicates, we have to ask how the content of these units themselves can be analysed. The examples we have looked at suggest that these units can be analysed componentially. Thus one of the arguments of the last example, 'a tall woman', can be broken down into the following set of features:

a tall woman: ↑TALL +HUMAN +ADULT −MALE +SINGULAR

(It is unnecessary to specify the meaning of the indefinite article – see p. 156.) A similar analysis, containing features such as 'private', 'motor', and 'vehicle', could be supplied for 'the car'. What is perhaps less obvious is that predicates, too, can be broken down into features, and can enter into relations of hyponymy and incompatibility. The predicate 'boiled' (in the sentence *Adam boiled an egg*) might, for example, be provisionally analysed into three components: 'cook', 'in water', and 'past'. The second of these components distinguishes 'boiling' from 'frying', etc., and is dependent on the first component. The third feature, although its nature is more complex (see p. 164), is necessary to distinguish the past meaning of *boiled* from the present meaning of *boils*. The analysis of 'boil' into components is required in order to explain, for example, the following entailment relation:

'Adam boiled an egg' entails 'Adam cooked an egg.'

To illustrate the point further, here is a somewhat more complicated example of the componential analysis of predicates: an example taken from the field of spatial relations. Consider the predicate 'was in front of' above. A simple way to represent this in terms of componential

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analysis (omitting the past tense factor) is to symbolize 'in front of' as a relative feature, contrasting directionally with 'behind':

a	→INFRONTOF	*b*

'*a* in front of *b*'

a	←INFRONTOF	*b*

'*a* behind *b*'

But this does not go far enough. The analysis of 'in front of' fails to show its relation to other locative meanings, such as 'over', 'under', 'by', 'on the left of', etc. For this purpose, three semantic oppositions are needed:

→DIRECTION	(directional contrast between 'in front of' and
←DIRECTION	'behind', 'over' and 'under', etc.)

+HORIZONTAL	'horizontal'	+LATERAL	'side-to-side'
−HORIZONTAL	'vertical'	−LATERAL	'back-to-back'

We add to these a reciprocal relation indicating that the common ground of all these meanings is that of spatial relationship:

↔SPATIAL '*a* is in a spatial relation to *b*'

And we also have to add the following redundancy rules:

±HORIZONTAL requires [↔SPATIAL]
±LATERAL requires [+HORIZONTAL]

The prepositions *in front of*, *behind*, etc., may now be defined:

(a) *over*	(b) *under*	(c) *in front of*	(d) *behind*
[↔SPATIAL]	[↔SPATIAL]	[↔SPATIAL]	[↔SPATIAL]
→DIRECTION	←DIRECTION	→DIRECTION	←DIRECTION
−HORIZONTAL	−HORIZONTAL	[+HORIZONTAL]	[+HORIZONTAL]
		−LATERAL	−LATERAL

(e) *on the left*	(f) *on the right*	(g) *beside, by*
[↔SPATIAL]	[↔SPATIAL]	[↔SPATIAL]
→DIRECTION	←DIRECTION	+PROXIMATE
[+HORIZONTAL]	[+HORIZONTAL]	[+HORIZONTAL]
+LATERAL	+LATERAL	+LATERAL

Features in brackets are predicted by redundancy rules, and may therefore be added without being specified as part of the definition. Thus each preposition is defined, in effect, by two features. Because of the incompatibility of formulae (a)–(f), this analysis shows the mutual inconsistency of all the following propositions:

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'*a* is in front of *b*' '*a* is behind *b*'
'*a* is over *b*' '*a* is under *b*'
'*a* is on the left of *b*' '*a* is on the right of *b*'

But does it have to be complicated? Why, for instance, should we not distinguish the three axes (vertical, front-to-back, and side-to-side) more economically by a single three-term opposition rather than by two binary oppositions? Firstly, we need to make a first cut between vertical and horizontal planes precisely to account for the meanings of the words *vertical* and *horizontal*. Secondly, the distinction between 'vertical' and 'horizontal' is required to explain the locative meanings of *by*. In fact, *by* has three locative meanings on a scale of generality, and one of these meanings (the middle one) can only be defined by abstracting the feature 'horizontal'. The three senses are exemplified in:

(1) The shell exploded *by* the wing of the aeroplane.
(2) Place the one coin *by* the other.
(3) The red car was parked *by* the green one.

In (1), *by* simply means 'in spatial proximity to'. Here 'by' could include 'over' or 'under'. In (2), the most likely sense is 'near to on a horizontal plane' – that is, excluding 'over' and 'under'. In (3) the meaning is even more specific: it is 'beside', in contrast to 'in front of' or 'behind'. If *by* in (1) is defined as ↔SPATIAL +PROXIMATE (contrasting in proximity with *away from*), then for the second definition we need to add +HORIZONTAL, and for the third definition +LATERAL:

by (1)	*by* (2)	*by* (3)
↔SPATIAL	[↔SPATIAL]	[↔SPATIAL]
+PROXIMATE	+PROXIMATE	+PROXIMATE
	+HORIZONTAL	[+HORIZONTAL]
		+LATERAL

Once again, discounting redundant features, each definition consists of two features only – and so we reach the interesting conclusion that all the prepositions we have considered, although their meanings interrelate in quite complex ways, convey exactly the same amount of contrastive information.

The three meanings of *by* are in a hyponymous relation, and illustrate the type of ambiguity of unmarked terms discussed on pp. 116–17. Yet a further point in favour of this analysis is that it can be generalized to the nouns *top*, *bottom*, *front*, *back* and *side*. There is a clear parallel between these terms and the prepositions we have been considering: 'top' is to 'over' as 'bottom' is to 'under', etc. The same oppositions

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±HORIZONTAL and ±LATERAL may be applied to both sets of words. But again, the necessity of distinguishing a feature +HORIZONTAL is demonstrated by the threefold ambiguity of *side*, which is exactly like that of *by*:

(4) the *side* of a balloon ('outer surface' in general sense)
(5) the *side* of a cake (as opposed to 'top' or 'bottom')
(6) the *side* of a car (as opposed to 'front' or 'back')

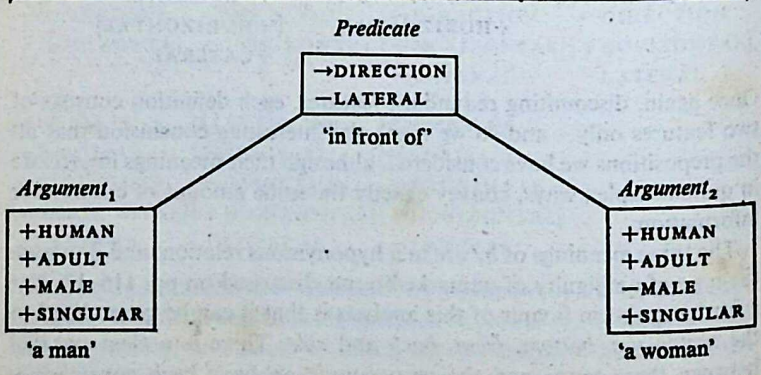
This illustrates the principle of simplicity in componential analysis. We economize as far as we can in reducing the number of features and oppositions in order to account for basic statements. But in this case, what was for the prepositions a slightly more complex analysis proved more economical in that it enabled the same oppositions to be used for other senses and other items of vocabulary. To generalize an analysis is, in the longer run, to simplify the whole semantic description.

This discussion of spatial relations has emphasized the point that predicates, like arguments, can be analysed componentially. So arguments and predicates are comparable units: on the one hand they are the elements of predications, and on the other they consist of features. On this basis, the following three-tier structure for the analysis of sentence meaning is proposed:

PREDICATIONS consist of ARGUMENTS, PREDICATES consist of FEATURES

At this stage I shall venture a fairly complete analysis of a predication – fairly complete, that is, except for the omission of redundant features:

(7) PREDICATION



This predication expresses the content of the sentence *A man is/was in front of a woman*, and to assure oneself that all these contrastive features

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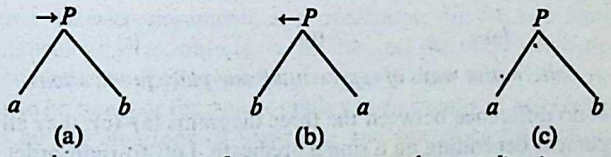
play a role in the meaning of that sentence, it is a useful exercise to vary the features one by one, noting what changes of meaning result. For example, substituting ←DIRECTION for →DIRECTION would change the meaning to 'A man is/was behind a woman'.

Predicate and argument, although they are the same kind of unit in terms of their componential make-up, have different roles in the whole predication. The predicate is the major or pivotal element, and may be said to GOVERN the arguments, which are in a relation of DEPENDENCY to it. This is why the diagram above has the shape of a dependency diagram, with the arguments branching off from the predicate. The predicate is the major element in the sense that it *determines* (in ways that will shortly be made clear) the number and nature of the arguments. In the above case, the relational meaning of 'in front of' requires the presence of two arguments which can be placed in a spatial relationship; without them, 'in front of' would not make sense.

We may distinguish between a *two-place predicate*, which governs two arguments, and a *one-place predicate* which governs one argument. All the predications we have considered so far have two-place predicates, and may therefore be called *two-place predications*. They may be diagrammed, in an abstract way, as follows:

(8)



alternative ways of representing two-place predications

Since all two-place predications contain a relational feature such as →DIRECTION, this may be said to determine the 'directionality' of the whole predicate, and hence of the predication. It is for this reason that the *P* is prefixed by an arrow in (a) and (b) above. Because of the mirror-image convention (p. 104), (a) and (b) in fact represent the *same* predication. They could, for example, stand respectively for 'A man was in front of a woman' and 'A woman was behind a man'. In (c), which does not contain an arrow, the factor of directionality is left unspecified. In (a) and (b), *a* is called the INITIAL argument, and *b* is called the FINAL argument; i.e. 'initial' and 'final' are used with reference to the direction of the arrow preceding *P*, not with reference to left-to-right order.

One-place predicates govern only one argument. For example:

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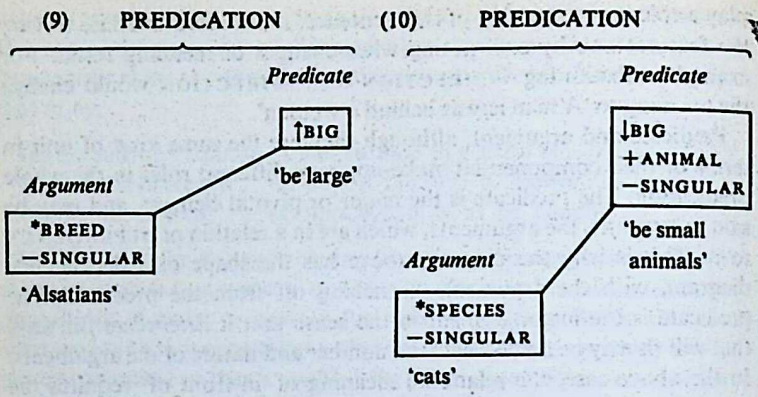
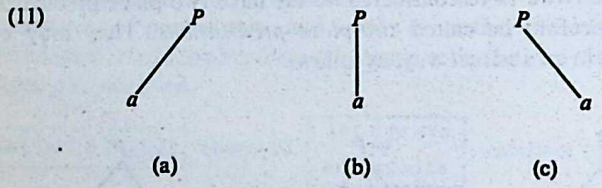


A one-place predicate is typically realized, as in these cases, by a nominal or adjectival complement: *Alsatians are large*; *Cats are small animals.* But this type of predicate can also be conveyed by intransitive verbs: *A light was shining*; *Morning came*; *That box is going to fall*; etc.



alternative ways of representing one-place predications

There is no difference between the three diagrams (a)–(c): they all show one argument depending on a single predicate. Left-to-right order is not significant here, any more than it is in componential analysis. One-place predicates do not contain relational features such as →DIRECTION, since a relation implies that there are *two* arguments to be related.

Predication Analysis

We have now arrived at the second kind of semantic analysis, which is interrelated with, and complementary to, componential analysis. This kind of analysis consists in breaking down predications into their constituents, and may therefore be called PREDICATION ANALYSIS. Componential and predication analysis together enable us to represent the greater part of the meaning of sentences. As yet, however, the combined analysis does not take account of 'logical' elements of sentence-meaning such as negation, coordination, definiteness, tense, or condition, which will be treated in Chapter 9. To this extent, predication analysis is

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incomplete: we are considering 'disembodied', unactualized propositions, which do not make any truth-claims about the world.

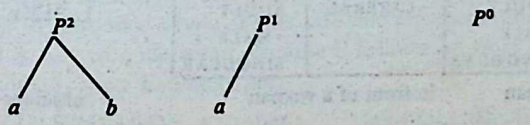
Nevertheless, it is worth pointing out in advance that there is a logical reason for regarding predicates as the main or governing elements of predications: the predicate is the place where the logical elements belonging to the complete predication as a whole are to be found: for example, tense, modality, and adverbial meanings. The predicate is also the main element of a predication in the sense that it cannot be dispensed with. Arguments can be omitted, and are variable in number. We have seen that a predication can contain two arguments or one argument, and there is even a case for saying that some predications have no arguments at all. Examples are meteorological utterances such as *It is raining*, or *It will be warm tomorrow*. It is difficult to accept that the element expressed by *it* in these sentences is an argument, since it has no meaning independent of the predicate: notice, for instance, that *it* is so predictable that one cannot construct a question for which *it* is an appropriate answer: **What was raining cats and dogs all last night? *It*.

I shall therefore distinguish three general types of predicate, two-place, one-place and no-place, and will symbolize them when necessary, as P^2, P^1 and P^0. (This classification is rather like the well-known classification of verbs into transitive, intransitive, etc., according to what other elements follow the verb. But it would be misleading to assume too close a correspondence between arguments and predicates, on the one hand, and grammatical subjects, objects, verbs, etc., on the other.) It is doubtful whether there are further predication types than these three, as what appear to be three- or four-place predications usually, if not always, turn out to be combinations of two-place and one-place predications (see 'subordinate predications', pp. 142–4). Thus, 'John gave the dog a bone' can be analysed as follows:

(12) { 'John caused *X*'
'*X*' = 'The dog received a bone'.

In summary, therefore, we have distinguished three types of predicate, and three corresponding types of predication:

(13)



'children + LIKE + sweets' 'John + BE ILL' '(it) + BE HOT'

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Notations for Predication Analysis

At this stage, let us think again about the formal language – Signese – which is being used to represent meanings. Up to Chapter 7, Signese was limited to componential formulae representing sets of features. Now it must be extended to represent predications. This can be done quite easily by turning the dependency diagrams (8) and (11) above into linear formulae:

(14) Two-place predications: $(a . \rightarrow P . b)$ OR $(b . \leftarrow P . a)$ OR $(a . P . b)$
One-place predications: $(a : P)$ OR $(P : a)$

Brackets are used to delimit the whole predication; a single dot (.) separates arguments from predicate in a two-place predication, and a colon (:) separates argument from predicate in a one-place predication. (I shall have no further need to illustrate no-place predications.) Once again, the mirror-image convention (p. 104) is in force, and the contrast between left-to-right and right-to-left order on the page will not be significant. (However, to make the formulae more easily understood, I shall prefer to represent predications in the order in which they are realized in syntax – see pp. 197–202.) It is unnecessary to use the superscripts 1 and 2 in P^1 and P^2, because the type of predicate is quite predictable from the type of predication.

In the formulae of (14), and in later, more complex formulae, I use *a*, *b*, *c*, etc., as variables for arguments, and *P*, *Q*, *R*, etc., as variables for predicates. In algebra, variables like *x* and *y* are used when the exact quantity indicated by these symbols is unknown. In a similar way, *a*, *b*, *c*, *P*, *Q*, *R*, etc., are used when the actual components making up the predicates are unknown, or rather, unspecified.

However, we may wish to symbolize predications with their componential content, thus giving a representation of the whole meaning. Signese therefore allows for 'predication-componential' formulae such as these, in which the componential formulae are placed under the predication formulae:

(7a)

(*a*	→*P*	*b*)
HUMAN	DIRECTION	HUMAN
ADULT	−LATERAL	ADULT
MALE		−MALE
SINGULAR		SINGULAR

'a man in front of a woman'

(9a)

(*a*	:*P*)
*BREED	BIG
-SING.	

'alsatians be large'

Here, and from now on, I am adopting the economizing convention of

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omitting the symbols, +, ↑, and → for unmarked or dominant terms – see p. 115. There is, however, yet a further simplification that can be carried out: this is to omit the variables, and to place the components in a simple linear arrangement:

(7b) (HUMAN ADULT MALE SINGULAR . DIRECTION —LATERAL. HUMAN ADULT —MALE SINGULAR) 'A man in front of a woman'

(9b) (BREED —SINGULAR : BIG) 'Alsatians be large'.

These are 'linear predication-componential formulae' which give the whole meaning in a linear form. Notice that although it is *unnecessary* to have such different notational alternatives, it is very *convenient* to have them, so that the notation can be just as detailed as is required for a particular purpose, or in order to save unnecessary space or effort. There is advantage in making Signese a flexible language for representing meanings, so we can allow it to contain as many notational variations as we want, so long as this does not lead to ambiguity.

Yet another convenience is to have a 'mixed' version of Signese in which variables such as *a*, *b*, *P* are combined with feature symbols. Suppose I want to represent the meaning of *The red car hit the wall*, but I do not wish to represent the whole content of the predication, but only part of it. In that case I can represent the meaning as follows:

(15) (VEHICLE SINGULAR *a* . *P* . CONCRETE SINGULAR *b*)

This merely specifies that a vehicle is in some relation to an object. But it also indicates, through the variable symbols *a*, *P* and *b*, that there is some further content in the arguments and the predicate which has not been specified. The symbols *a*, *b*, *c*, *P*, *Q*, *R*, etc., may be called *residual variables*, because they do not necessarily represent the *whole* content of an argument or predicate. They merely symbolize the fact that one or more features may be taken as unspecified at the point in the formula at which they occur.

Finally, mention must be made of informal and semi-informal representations of meaning. There is the already familiar convention of representing meanings *informally* by enclosing English expressions in single quotation marks; e.g. 'The red car hit the wall'. It was noted earlier that this convention, although useful in exposition, is necessarily imprecise. I wish now to introduce a type of *semi-informal* representation of predications; it is easy to understand, because it follows on from notational practices already used. Examples are:

(a man . IN FRONT OF . a woman) (alsatians : BE LARGE)
(the red car . HIT . the wall) (the train : DEPARTED)

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Here the symbols for predication analysis are used, including the use of small letters for arguments (e.g. a man, a woman) and large capitals for predicates (e.g. INFRONTOF, HIT). But the content of arguments and predicates is simply represented informally by English words.

From time to time I shall add new points of notation, but in general the conventions just discussed will be the basis for semantic representation in the rest of the book.

Entailment and Inconsistency

In Chapter 6 we noted the close connection between hyponymy and entailment, and between incompatibility and inconsistency. We are now in a position to understand these connections better. In predication analysis, hyponymy and incompatibility are treated as relations between arguments and between predicates, rather than between word-meanings.

An entailment relation exists between two propositions which differ only in that an argument of one is hyponymous to an argument of the other. For example, *a* is a hyponym of *b* in:

(16) 'I saw [*a* a boy]' entails 'I saw [*b* a child]'

The hyponymy relation can also be between predicates:

(17) 'Turpin [*P* stole] a horse' entails 'Turpin [*Q* took] a horse'

(since 'stealing' is a kind of 'taking'). It can be seen that the entailment holds by virtue of the SEMANTIC INCLUSION of one predication in the other: i.e., 'Turpin stole a horse' includes all the features of 'Turpin took a horse'. But the relation of entailment works in two different directions, according to whether the argument concerned has a SPECIFIC or GENERIC interpretation. The specific interpretation is found in (16) and (17) above, and also in:

(18) (the children . WERE EATING . apples i.e. 'some apples') *entails* (the children . WERE EATING . fruit)

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But for the generic propositions of (19), the entailment is the other way round:

(19) (children : ARE A NUISANCE i.e. 'children in general') *entails* (boys : ARE A NUISANCE)

The latter type of entailment works only for hyponymy of arguments.

There is a similar connection between incompatibility and inconsistency, but this is more restricted, because it applies only to incompatibility of predicates:

(20) (mary . DISLIKES . work) *is inconsistent with* (mary . LIKES . work)

(21) (peter . IS ON THE LEFT OF . his father) *is inconsistent with* (peter . IS ON THE RIGHT OF . his father)

The following general rules for entailment and inconsistency may now be stated:

X entails Y if X and Y are identical except that

1. *X* contains an argument *a* and *Y* contains an argument *b*, and
2. *a* is a hyponym of *b* (*a* and *b* being interpreted specifically)

OR

1. *X* contains an argument *a* and *Y* contains an argument *b*, and
2. *b* is a hyponym of *a* (*a* and *b* being interpreted generically)

OR

1. *X* contains a predicate *P* and *Y* contains a predicate *Q*, and
2. *P* is a hyponym of *Q*

X is inconsistent with Y if X and Y are identical except that

1. *X* contains a predicate *P* and *Y* contains a predicate *Q*
2. *P* is incompatible with *Q*

These are rough-and-ready rules, since we are not yet in a position to discuss the relation between predications and the truth-conditions of propositions. Strictly, it should be said that these rules define relations of semantic inclusion and semantic exclusion between predications, and that these relations, if certain conditions are observed, will correspond to entailment and inconsistency relations between predications. But we are progressing along the road towards predicting basic statements from semantic representations.

These rules of entailment and inconsistency appear to be rather restricted in their application, but they are more powerful than they seem. To show this, I shall make four separate points:

1. These rules apply to all types of predications, not just to two-place predications. The following are examples of their application to one-place predications:

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(22) (this paint : IS SCARLET) *entails* (this paint : IS RED) ('Scarlet' is a hyponym of 'red')
(23) (this paint : IS SCARLET) *is inconsistent with* (this paint : IS BLUE) ('Scarlet' is incompatible with 'blue')

2. Because of the mirror-image convention (pp. 104, 132), the rules apply no matter what order the elements come in. So the entailment relation between 'The bottles contained burgundy' and 'Wine was in the bottles' follows from the fact that 'contain' and '(be) in' are converses, and 'burgundy' is hyponymous to 'wine'.

3. As we have seen, relations of hyponymy and incompatibility are not limited to single words: they can hold between word and phrase, or between phrase and phrase. So the entailment rule covers cases like the following, where the difference between the two propositions lies in the addition of one or more words, or the substitution of a phrase for a word:

(24) (she . MARRIED . a tall handsome Swede) *entails*
(she . MARRIED . a Swede)
(25) (james : IS A BRIGADIER) *entails*
(james : IS AN ARMY OFFICER)
(26) (he . DEEPLY OFFENDED . me) *entails*
(he . OFFENDED . me)

4. The rules of entailment and inconsistency apply cumulatively, in the following ways:
(A) If *X* entails *Y* and *Y* entails *Z*, then *X* entails *Z* (i.e. entailment is a *transitive relation* – see p. 105)
(B) If *X* entails *Y* and *Y* is inconsistent with *Z*, then *X* is inconsistent with *Z*.

These two supplementary rules may be illustrated by supposing *X*, *Y*, and *Z* to be the following:

(A) *X*: 'Boys ran down the street'
Y: 'Boys went down the street'
Z: 'Children went down the street'
(B) *X*: 'John was singing drunkenly'
Y: 'John was singing'
Z: 'John was silent'.

Thus by using predication analysis we can develop rules of broad application for deriving basic statements about entailment and inconsistency.

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Null Arguments

A further step in this direction is the introduction of NULL ARGUMENTS, or arguments which contain no features. A null argument is void of content in the sense that it has the maximum generality of reference. It has no syntactic realization, but is detected negatively; for example, by the absence of an object from a verb which normally requires one: *John is eating* (i.e. 'John is eating something-or-other'); similarly *John is reading/writing/playing/driving/smoking*, etc. Other syntactic 'gaps' which mark null arguments are the absence of an agent phrase with the passive, and the absence of argument-specifying modifiers of an abstract noun:

(27) The dinner was cooked (i.e., '... by someone-or-other')
(28) The internment of suspects (i.e., '... by someone-or-other')
(29) The internment (i.e., '... of someone-or-other by someone-or-other')

In each of these cases, there is no realization of one or both of the arguments of a two-place predicate.

I shall symbolize null arguments by the zero symbol $\emptyset$; hence (27) may be represented semantically as '(dinner . ←COOKED . $\emptyset$)', or in more general terms as '(a . P . $\emptyset$)'. Because they contain no features, null arguments are by definition (see p. 92) superordinate to all other arguments. Hence we are able to explain (by the above rule of entailment) why:

(30) 'John is smoking cigars' entails 'John is smoking'
(31) 'John is eating nuts' entails 'John is eating' etc.

It is a general rule, that is, that (a . P . b) entails (a . P . $\emptyset$), and that (a : P) entails ($\emptyset$: P). It is this explanatory value that justifies the postulating of null arguments. There is an important difference, however, between sentences like *John is eating* and *John is sleeping*. The latter contains a 'true' intransitive verb, which is semantically equivalent to an adjectival complement (cf. *John is asleep*), and expresses a one-place predicate. The former, on the other hand, expresses a two-place predicate, of which one of the arguments is null.

Selection Restrictions

What I have said about null arguments seems to conflict with the observation that, in many cases, the unexpressed argument does have some content. In *The dinner was cooked*, for example, although no agent is specified, we at least gather that the unspecified argument, the 'cooker', must have been human. It is this same recognition that 'cook' must have

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a human agent that leads us to recognize the oddity of **The water cooked the dinner* or **The dinner was cooked by a cup*, in the unlikely event of encountering such sentences. From such cases we observe that meaning seems to 'flow sideways' from one part of a sentence to another; that certain features of meaning are predictable from semantic environment, and that any contradiction of such features will result in an unacceptable utterance.

These phenomena are discussed under the heading of SELECTION RESTRICTIONS, and the following are examples of the sorts of unacceptable utterances which result from the violation of these restrictions:

'Water is in love with my friend' ('Water' is inanimate, not animate)
'The girl assembled' ('Girl' is singular, not plural)
'Happiness is green' ('Happiness' is abstract, not concrete)
'The boys drank the cake' ('Cake' is solid, not liquid)
'The flatworm got divorced' ('Flatworm' is non-human)

Earlier attempts to account for selection restrictions dealt with them as conditions for syntactic co-occurrence (Chomsky 1965), or at least as co-occurrence conditions defined on syntactic units such as nouns and verbs (Katz and Fodor, 1963; Weinreich, 1966). But there are two good reasons why selection restrictions are to be defined not syntactically, but semantically, in terms of units such as arguments and predicates:

1. If two words are synonymous, their selection restrictions are the same. Thus assuming that *frighten* and *scare* have the same sense (although they are stylistically different), one and the same condition explains why *The idea frightened the girl* and *The idea scared the girl* are acceptable, while **The girl frightened the idea* and **The girl scared the idea* are equally unacceptable.
2. If two expressions are converses (e.g. *own* and *belong to*), they have the same selection restrictions, except that these restrictions apply in the reverse order. It is the same restriction which explains why *The man owned a fortune* and *A fortune belonged to the man* both make good sense, while **A fortune owned the man* and **The man belonged to a fortune* are both nonsensical.

In both these cases, restrictions that would require two separate statements on the syntactic level can be brought together on the semantic level. So the simpler and more explanatory account is that which deals with selection restrictions semantically.

Another error of early accounts of selection restrictions was to treat them rather like grammatical rules of agreement (e.g. the rule which says

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that a plural verb must follow a plural subject). Just as a rule of agreement *obligatorily* marks one constituent with a feature in order to make it agree with another constituent, so selection restrictions can be framed obligatorily as follows: 'If feature *X* is in unit A, then feature *Y* must be in unit B'. Such a rule might require, for example, that the verb *miaow* must always have a 'feline' noun as its subject, or that the verb *neigh* must always have an 'equine' noun as its subject. This works fine in distinguishing cases like:

(32) The horse neighed (33) *The horse miaowed

but it does not account for the acceptability of both the following:

(34) The animal neighed (35) The animal miaowed.

Since *animal* is semantically neither 'equine' nor 'feline', an obligatory co-occurrence condition of this kind would predict that both (34) and (35) would be unacceptable. What a selection restriction *should* explain, though, is precisely that the 'animal' in (34) and (35) is understood to be 'equine' and 'feline' respectively.

To achieve this type of result, Weinreich (1966) proposed a mechanism of 'transfer features', which would be transferred from the verb's specification to that of the noun, and would only be prohibitive in cases where the result of the transfer was a self-contradictory combination of features. For example, the transfer of the feature 'feline' from *miaow* in (33) would result in a clash between opposing features 'feline' and 'equine' in the subject; but in (35), the transfer of 'feline' would correctly represent the 'overflow' of meaning from verb to noun, by showing that the animal would be understood to be a cat.

So Weinreich's transfer features gave the right results, even though they were formulated in terms of the rather *ad hoc* mechanism of shifting features from one syntactic constituent to another. Equivalent results can be obtained more satisfactorily by formulating such conditions as CONTEXTUAL REDUNDANCY RULES which operate on the structure of predications, and require the presence of a given feature in an argument if another given feature is in the predicate which governs it. Redundancy rules of the kind already discussed (pp. 110–13) add features within the componential formulae (i.e. within arguments or within predicates). For example, the rule

(36) METAL requires [−ANIMATE]

tells us that if a member of the opposition of METAL (see p. 100) occurs in a set of features, then −ANIMATE also occurs in that set. To account for selection restrictions, what is needed is an extension of redundancy

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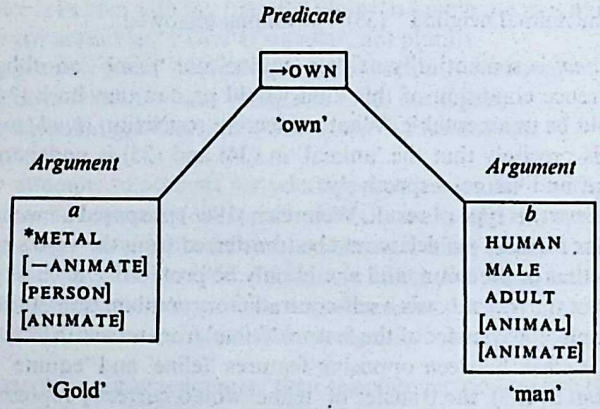
rules to cases where the conditioning feature belongs to a predicate and the redundant feature belongs to an argument. For example:

(37) OWN in a predicate requires [+PERSON] in the initial argument governed by that predicate.

This rule may be more simply stated in a formulaic way, square brackets enclosing the redundant feature: [+PERSON]. →OWN. Let us consider the predication *'Gold owns the man', which is semantically anomalous (although such an utterance might be used metaphorically, e.g. of a miser). The way this anomaly is derived from the semantic representation is indicated in the following dependency diagram:

(38)



[To simplify, I have used in (38), and will continue to use, the 'unmarkedness' convention which allows the + to be omitted in features such as +HUMAN, +MALE.]

The violation consists in the co-occurrence in the initial argument *a* of two contrasting features ANIMATE and −ANIMATE. Both these features are added by redundancy rules (and are therefore shown in square brackets). The feature −ANIMATE is added by rule (36) above, and the feature ANIMATE is added by a rule 'PERSON requires [ANIMATE]', the feature [PERSON] itself coming from rule (37). We see that the cumulative result of these three redundancy rules is to mark an argument as self-contradictory. A violation of selection restrictions, in this way, turns out to be a special case of a type of componential violation which we acknowledged elsewhere (pp. 97, 111) in explaining the ill-formedness of, for example, 'male woman' or (by redundancy rule) 'male house'. (The opposition ±PERSON is distinct from ±HUMAN, in spite of a strong association between them: gods, angels, fairies, etc., are

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'persons' who are not human. Also animals are sometimes treated as persons: it is not unknown, for example, for animals to become owners of property as a result of bequests; it would therefore be wrong to add the feature HUMAN to the initial argument of →OWN.)

This method of handling selection restrictions also accounts for the semantic 'overflow' in a sentence like *The animal neighed* or *The dinner was cooked.* In the former case, the feature □SPECIES ('horse') is added to the argument 'the animal'; in the latter case, the feature HUMAN is added to the null argument representing the 'cooker'.

In this way selection restrictions are incorporated into semantic description by a method which introduces a minimal extension to the kinds of rule required for other reasons, and which fits closely with other aspects of the model. We notice, for example, that contextual redundancy rules give further significance to the relation of *government* between predicates and their arguments: predicates not only determine the number of arguments, but to some extent also their composition. Further, by classifying propositions containing violations of selection restrictions as semantically anomalous, we show their affinity to the kind of semantic anomaly introduced in the discussion of basic statements on p. 75. Just as *'The orphan's father drinks heavily' presupposes the contradiction *'The orphan has a father', so *'Gold owns the man' presupposes the contradiction *'Gold is a person'. The only difference is that in the latter case, the contradiction is arrived at indirectly, through the operation of redundancy rules. Thus selection restrictions are seen to have an explanatory function in accounting for basic statements.

Many metaphorical uses of language involve a violation of selection restrictions, and again contextual redundancy rules help to explain why. Faced with an apparent clash of features such as HUMAN and −HUMAN, we react by trying to find a way out of the semantic dilemma through transfer of meaning (see pp. 217–19), often metaphorical transfer. In 'My gas meter eats up 10*p*s', for example, the feature −ANIMATE in 'meter' clashes with the feature ANIMATE added by 'eats'. We make sense of this utterance by interpreting 'eats' figuratively, to mean roughly 'My gas meter uses up 10*p*s just like an animal eating something'.

In spite of the power of contextual redundancy rules, it remains controversial how far they properly form part of a semantic description. It has been argued (e.g. by McCawley, 1970a) that we judge the acceptability of odd combinations such as *I poured my aunt into an inkwell* on the basis of factual plausibility rather than a semantic knowledge of how sense-components combine. It is certainly true that the boundary between semantic and factual knowledge is particularly difficult to detect in this area, and many sentences which at first glance appear logically

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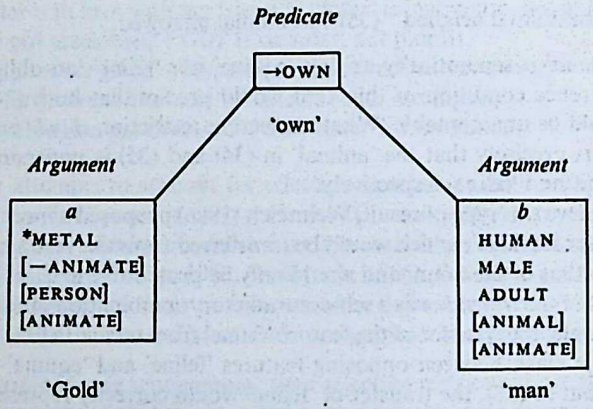

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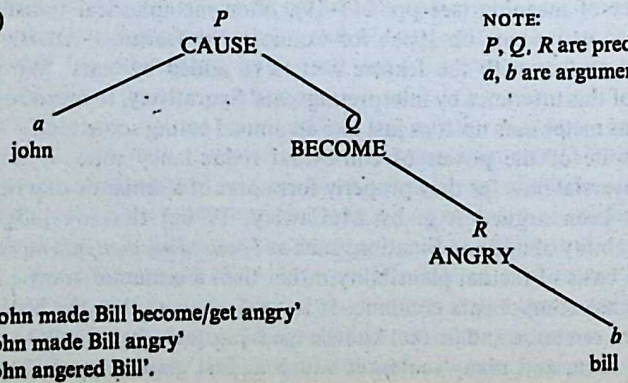
absurd can be given a meaningful interpretation if we stretch our imaginations a little. By contrast with 'The farmer owned the horse', 'The horse owned the farmer' seems so ridiculous as to be beyond the bounds of literal interpretation. But if we consider (a) that horses have on occasion been given human privileges (Caligula made his horse a consul), and (b) that the institution of slavery has in the past reduced men to the status of being owned, we do not even have to conjure up worlds of fantasy to find situations in which the second proposition might be true. Such oddities, then, lie outside the domain of conceptual meaning, and are to be explained rather in terms of connotative meaning and prototypic categories. But other cases, such as **John elapsed* and **The girl assembled* seem to be equally clearly nonsensical on conceptual grounds, and so we may continue to assume that selection restrictions have a role in semantic description.

Subordinate Predications

So far we have seen the need to set up only a very simple structure for predications. The dependency tree diagrams for one- and two-place predications are maximally simple compared with the tree diagrams one needs to represent the constituent structure of even a very simple sentence (see p. 10). But complexity comes, in semantics, through the way in which the same small repertoire of structures recurs in a single overall predication. To build in this recursive principle, we allow for the possibility that a predicate may govern not only arguments, but other predicates. This means that in semantics a SUBORDINATE predication may be part of a MAIN predication, just as, in syntax, a subordinate clause may be part of a main clause. With this proviso predication analysis can now include more complex structures such as the following:

(39)



NOTE:
P, *Q*, *R* are predicates
a, *b* are arguments

i.e. 'John made Bill become/get angry'
or 'John made Bill angry'
or 'John angered Bill'.

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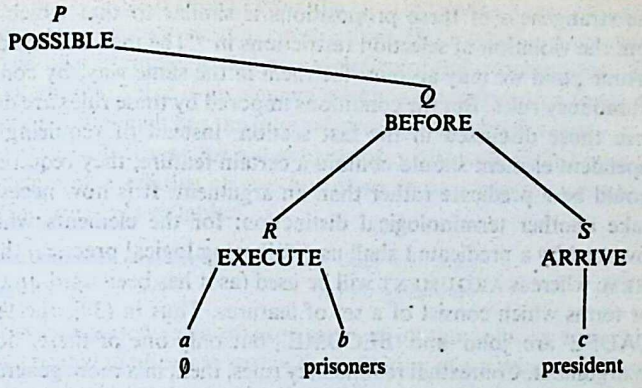
(40)



i.e. 'It is possible that the prisoners were executed before the president arrived' or 'The execution of the prisoners may have preceded the arrival of the president', etc.

By enclosing subordinate, as well as main predications in brackets, it is possible to use the linear notation to represent (39) and (40) as follows:

(39a) $(a \,.\, P \,.\, (Q : (R : b)))$
(40a) $(P : ((a \,.\, R \,.\, b) \,.\, Q \,.\, (c : S)))$

Or, using the semi-informal method described on p. 133, they may be symbolized:

(39b) (john . CAUSE . (BECOME . (ANGRY : bill)))
(40b) (POSSIBLE : ((∅ . EXECUTE . prisoners) . BEFORE . (president : ARRIVE)))

It is not difficult to imagine how even very complex sentences may be semantically analysed into smaller and simpler elements through this device of subordination. But as we see from (39) and (40), the subordinate predications have varied syntactic realizations, and are not necessarily expressed by subordinate clauses.

The positions at which dependent predicates occur are not arbitrary, but are determined by the nature of the governing predicate. One could not, for example, reverse the arguments in (39) to make *'Bill's anger caused John', nor could one exchange *P* and *S* in (40) to produce *'It arrived that the prisoners were executed before the president is possible'.

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The strangeness of these propositions is similar to that which results from the violation of selection restrictions in *'The man belonged to the fortune', and we may account for them in the same way, by contextual redundancy rules. But the conditions imposed by these rules are different from those discussed in the last section: instead of requiring that a dependent element should contain a certain feature, they require that it should be a predicate rather than an argument. It is now necessary to make another terminological distinction: for the elements which are governed by a predicate I shall use (following logical practice) the word TERM, whereas ARGUMENT will be used (as it has been used up to now) for terms which consist of a set of features. Thus in (39), the terms of 'CAUSE' are 'john' and 'BECOME', but only one of these, 'john', is an argument. Contextual redundancy rules, then, in a more general sense state what conditions must be met by the *terms* of a given predicate. For example, the final term of the predicate 'CAUSE', representing the 'result', must be a predicate; similarly the change-of-state predicate 'BECOME' must have a predicate as its term. These rules will eliminate a proposition such as *'God caused the world' or *'James caused the book', although they do allow 'God caused the world to (come to) exist' (i.e. 'God created the world'), because 'CAUSE' in this case governs 'BECOME', which in turn governs the predicate 'EXIST'. Although I have stated these rules as operating on predicates, more accurately they operate on the oppositions (such as →CAUSE/←CAUSE 'cause'/'result from' and △BECOME/▽BECOME 'become'/'remain') whose members occur in predicates.

Downgraded or 'Featurized' Predications

There is a second way in which one predication may be included in another – and that is to reduce its status in the semantic hierarchy still further: to the status not of a term, but of a *feature*. Predications which are 'demoted' in this way will be called DOWNGRADED PREDICATIONS; to see why they are necessary, consider the one-way relation of entailment between:

(41) 'A man who was wearing a wig entered the room.'
(42) 'A man entered the room'.

It is clear that if the rule of entailment is to operate here, 'a man who was wearing a wig' has to be hyponymous to 'a man'. In componential terms, this means that 'who was wearing a wig' must be represented by an extra feature, just like 'tall' in 'a tall man'. But in its internal construction, 'who was wearing a wig' is itself a predication (roughly '(man.

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WEAR . wig)'). This is evident from the fact that 'WEAR' is a two-place predicate with its own selection restrictions (*'... who was wearing a coefficient', for example, would be a violation of those restrictions). This means, then, that there is an element which is equivalent to a feature in its function, but which has the internal structure of a predication.

The most explicit way for a downgraded predication to be expressed is by means of a relative clause; but often shorter syntactic means of expression are also available:

A man who was wearing a wig	*A man with a wig*
A man wearing a wig	*A bewigged man*

The most condensed form of expression of all, however, is to include the downgraded predication within the definition of a single word. Many nouns have such an element in their definitions: *butcher* 'a man who sells meat'; *cyclist* 'a person who rides a bicycle'; *seat* 'a place on which to sit'; etc. Adjectives, too, are often to be defined by means of a downgraded predication: *illiterate* 'who cannot read'; *rich* 'who has much property'; etc. The downgraded predications may even contain further predications (either subordinate or downgraded): for example, the proposition 'that God does not exist' is embedded in the definition of *atheist* ('a person who believes that God does not exist').

In the semantic notation of Signese and in diagrams, I shall indicate a downgraded predication by placing it in angle brackets ⟨ ⟩:

(43)

HUMAN	'a misogynistic novelist'
ADULT	'a man who writes novels
MALE	(and) who hates women'
SINGULAR	'a novel-writing misogynist'
⟨who . WRITE . novels⟩	'a woman-hating male novelist', etc.
⟨who . HATE . women⟩	

It is clear that each of the downgraded predications in (43) could themselves be expanded in terms of componential content. For example:

(44)

⟨ *a* . →*P* . *b* ⟩

'who'	→EMOTION ↓LOVE	HUMAN ADULT —MALE —SINGULAR
'who'	'hate'	'women'

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(The cross-referring significance of 'who' will be dealt with in the next chapter. It is sufficient to notice here that a downgraded predication always shares part of the content of the remainder of the argument in which it occurs: one of the arguments *within* the predication corefers to (i.e. has the same reference as) that part of the main argument which is *outside* the predication. In this sense, 'who' in (44) stands as a surrogate for 'man'.)

The notion of a downgraded predication can also be extended to predications which are features of predicates. We may therefore distinguish two kinds of downgraded predicaton:

1. A QUALIFYING PREDICATION occurs within an argument and underlies many of the 'adjectival' functions of syntax: adjectives, relative clauses, qualifying prepositional phrases, etc.; e.g. '*rich* bachelors', bachelors *in London*' '*London* bachelors', 'bachelors *who own fast cars*'. All the examples we have considered so far have been qualifying predications.

2. A MODIFYING PREDICATION occurs within a predicate, and underlies many of the 'adverbial' functions of syntax: adverbs, adverbial prepositional phrases, adverbial clauses, etc.; e.g. 'He got married *in church*', 'He *soon* got married', 'He got married *to please the family*'.

Like qualifying predications, modifying predications can also be incorporated into the definition of a single word; *sprint*, for example, means 'to run *quickly*'; *repeat* means 'to say *again*', etc. An example of a modifying predication is:

(46) (*a* : *P*)

HUMAN −ADULT −MALE SINGULAR	+ASLEEP ⟨which . LAST . 3 hours⟩

i.e. 'The girl slept *for three hours*'
'The girl was asleep, *which lasted three hours*'

This account of 'adverbial' meaning correctly predicts the entailment relation between the meanings of two sentences which differ only in the presence or absence of an adverbial construction:

(47) 'We slept for three hours' entails 'We slept'.
(48) 'John was singing drunkenly' entails 'John was singing'.

Again, I leave until next chapter a fuller explanation of the argument

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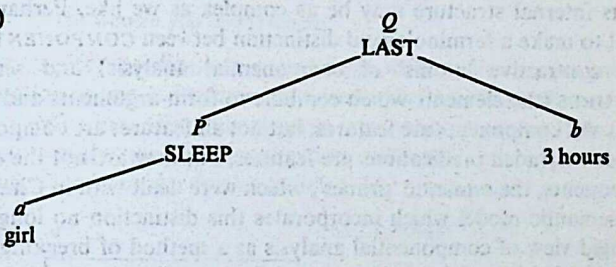
which is represented in (46) as 'which'. This argument clearly has a coreferential function similar to 'who' in (44), but this time the coreference is to the whole of the main predication. Thus with reference to the situation described by 'The girl slept for three hours', we could use the question 'What lasted three hours?', and elicit the answer 'the girl's sleep'. This suggests an alternative analysis which is very close to that of (46):

(49)



'The girl's sleep lasted three hours'

The exact nature of the paraphrase relation of this to (46) will be dealt with on pp. 257–9. The point I wish to note here is this: since verbs (except *be*) are invariably predicate-expressing elements, the predicational meaning of adverbial elements is confirmed by paraphrases such as those between *The girl's sleep lasted three hours*, where the predicate is expressed by the verb *last*, and *The girl slept for three hours*, where it is expressed by the preposition *for* introducing an adverbial phrase of duration. Further examples of such verbal–adverbial paraphrases are:

(50) { John sliced the cake *with a knife.*
John *used a knife* to slice the cake.

(51) { The food was stolen *before the guests arrived.*
The theft of the food *preceded* the arrival of the guests.

Once again, the notation we have been using can be adapted to a linear form:

(43a) $a\langle a\,.\,P\,.\,b\rangle\langle a\,.\,Q\,.\,c\rangle$ 'misogynistic novelist'
(43b) man ⟨who . WRITE . novels⟩⟨who . HATE . women⟩
(43c) HUMAN ADULT MALE SINGULAR ⟨who . WRITE . novels⟩ ⟨who . HATE . women⟩

(46a) $(a : P\langle b\,.\,Q\,.\,c\rangle)$ 'The girl slept for three hours'
(46b) (girl : SLEEP⟨which . LAST. 3 hours⟩)
(46c) (HUMAN −ADULT −MALE +SINGULAR : ASLEEP⟨which . LAST . 3 hours⟩)

These formulae represent the same meanings as (43) and (46) to varying

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degrees of specificity. Note that *a* in (43a) and *P* (46a) are what I earlier (p. 133) called 'residual variables': they represent the content of major argument and predicate *apart from* the downgraded predications which are specified.

Downgrading is a means of creating new semantic features out of existing ones. A downgraded predication functions as a single feature, but its internal structure may be as complex as we like. Perhaps it is useful to make a terminological distinction between COMPONENTS (the basic contrastive 'atoms' of componential analysis) and semantic FEATURES (the elements which combine to form arguments and predicates). All components are features, but not all features are components; thus downgraded predications are features, but they are not the atomic components, the semantic 'primes', which were dealt with in Chapter 6. The semantic model which incorporates this distinction no longer has the rigid view of componential analysis as a method of breaking down word-meanings into their ultimate atomic parts. The open-endedness of lexical meaning can be accounted for by other means: namely, in terms of the unlimited complexity which word-meanings can (in principle) attain through subordinating and downgrading. There are now no grounds for arguing that the extension of componential analysis to the whole vocabulary of a language would require limitless numbers of semantic components; in fact, there is no reason why the number of semantic components with which a language operates should not be relatively small.

More on Semantic Deviation

To conclude this chapter, I shall show how predication analysis, enlarged by the concepts of subordination and downgrading, can be used to explain semantic deviations such as tautology and contradiction. (In discussing these types of deviation we remember, as always, that a proposition represents one possible meaning of a declarative sentence. If a proposition is absurd, it does not necessarily follow that the sentence expressing it can be given no meaningful interpretations; but the creative aspect of semantics which accounts for metaphorical and other 'special interpretations' will be ignored for the present – see pp. 215–27.)

Tautology arises, roughly speaking, when information contained in an argument of a predication includes the information contained in the rest of the predication. In a one-place predication, this means simply that the argument is hyponymous to the predicate:

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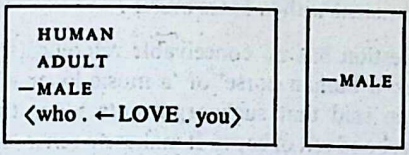
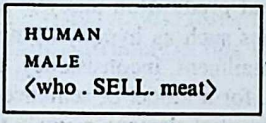
(52) (*a* : *P*)



'The woman you love is female'

In a two-place predication, a tautology arises wherever a qualifying predication in one of its arguments semantically includes the rest of the main predication. (For this purpose we assume that the 'who/which' argument in the qualifying predication is identical to the set of features to which it corefers; see further p. 160.)

(53) (*a* . SELL . food)



'A butcher sells food'

These rules can be stated more precisely in linear notation:

Rules of tautology:

(a) If *a* is hyponymous to *P*, (*a* : *P*) is a tautology
(b) If (*a* . *P* . *b*) semantically includes (*a* . *Q* . *c*), then (*a* ⟨*a* . *P* . *b*⟩ . *Q* . *c*) is a tautology.

The rules for contradiction are the opposite to these; for one-place predications, the rule is that the argument is incompatible with the predicate ('The woman you love is male'), and the rule for two-place predications is that the qualifying predication semantically excludes the remainder of the main predication: 'Tennis-lovers hate tennis'.

The third type of deviation, semantic anomaly (see p. 75) arises when one of the arguments or the predicate of the main predication is self-contradictory, i.e. contains two contrasting features such as HUMAN and − HUMAN, or contains two downgraded predications which semantically exclude one another:

'*Human horses* feed on oats.'
'This programme is for *music-lovers who dislike music*.'

We thus see a necessary connection between two propositions which are inconsistent and a contradiction:

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'*a* is a horse' is inconsistent with '*a* is human'.
'*a* loves music' is inconsistent with '*a* hates music'.

The argument (*a*) in question has no conceivable reference to reality: there is no such thing as 'a human horse' or 'a music-lover who hates music'. Hence it is often said that such arguments place the whole question of truth and falsehood out of court. It makes no sense, according to this view, to inquire whether 'Human horses feed on oats' is a true or a false proposition (see p. 75).

Conclusion

The object of this chapter has been to show that predication analysis is a necessary addition to the componential analysis discussed in Chapters 6 and 7, if we are to be able to provide an account of the meaning of whole sentences. It has been seen that predication analysis provides a connection between meaning relations such as hyponymy and incompatibility and basic statements of entailment, inconsistency, tautology, contradiction, etc. At the same time, for a model of sentence-meaning, predication analysis still lacks one essential element, namely the logical element which relates predications to claims about the real world. The predications we have been considering strictly do not have properties of truth and falsehood, whereas propositions do. To this extent, this chapter has ignored a gap which exists between predication analysis and basic statements of entailment, inconsistency, etc. One of the aims of the following chapter is to bridge this gap.

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9. Logic in Everyday Language

Logic, the study of the organization of rational thought (especially laws of valid inference), has always been regarded as the preserve of the philosopher. In the present century, this age-old study has evolved, through the development of symbolic logic, into a highly rigorous study allied to mathematics. Now, it seems, linguistics is invading the territory. After all, what has been the subject of the preceding chapter, if not the systematic explanation of logical relations within and between sentences? A semantic representation is also a logical representation. Why, one might ask, is linguistics intruding in this way on the traditional territory of the logician?

Logical Systems and Ordinary Language

Part of the answer lies in a difference of aim. The logician's aim, in devising a logical system, is typically normative rather than descriptive: he is not so much interested in how we actually do organize our thoughts in language, as in how we ought to do so if we are to avoid the fallacious reasoning which arises from ambiguity, contradiction, structural confusion, etc.; in short, if we are to avoid the traps which everyday language sets for unwary thinkers. Historically, symbolic logic has in part arisen through philosophers' gradual discovery that the syntactic structures of language reflect only indirectly the underlying structures of meaning. Logicians have therefore seen an advantage in abandoning ordinary, natural language in favour of artifical formal languages or 'calculi', which bear the same sort of relation to the 'natural logic' that people use in ordinary speech and thinking as the languages of arithmetic and algebra bear to ordinary English utterances about number. Once this step is taken, neater and more abstract formulations are possible. The point is made in a simple and obvious way by a comparison of:

(1) 'If you have ten cows and take six of them away, you are left with four.'
(2) '$10 - 6 = 4$'

Liberated from ordinary language, such calculi tend to develop under

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their own momentum, the aim being to construct a strict deductive system, with no more primitives or axioms than are necessary, with adequate rules of inference, etc. So developed, they become powerful systems of thought in their own right, in separation from their origin in ordinary language.

An example of how natural languages and logical languages have diverged is afforded by the logical system known as PROPOSITIONAL CALCULUS with which the study of formal logic usually begins. Here, logicians have succeeded in reducing a number of logical link-words or operators ('not', 'and', 'or', 'if') to a single primitive logical operator 'neither ... nor'. One of the steps in this reduction was the explanation of 'not-*X*' (where *X* is any proposition) as an abbreviation for 'neither-*X*-nor-*X*'. Within this system then, (a) 'John is not a man' is an abbreviation for (b) 'John is neither a man, nor is he a man' (Quine, *Mathematical Logic*, pp. 45–6). Now, this is highly satisfactory to a logician, because both propositions have the same truth-value. But it will not do for the linguist, because (b) is not even well-formed: there are virtually no circumstances, in ordinary discourse, where one conjoins a proposition with itself.

At the same time there are places where the concerns of logic and of semantics (in the linguist's sense) converge. Until the sixties, linguists largely concentrated their attention on the surface structures of linguistic expressions (phonology and syntax) rather than on the structures of meaning underlying these. Since then, the same sort of consideration which led philosophers to be dissatisfied with syntactic structure as a guide to logical relations has also led linguists to search for a deeper level of representation – a semantic or logical representation – to explain the meanings of a sentence, and their relation to its form. To take an example: one of the ancient problems of logic is the puzzle of why *someone*, *anyone*, *everyone*, and similar quantifier expressions (see p. 171) do not behave in the same way as words like *John*, *Bill*, and *Daphne*, though they have the same grammatical function as nouns, and may act as subjects, objects, etc.:

(3) *a* Daphne is beautiful
b You will marry Daphne
c Therefore, you will marry someone beautiful

(4) *a* Someone is beautiful
b You will marry someone
c Therefore, you will marry someone beautiful

[Example adapted from George Lakoff, *Linguistics and Natural Logic*, 1970]

Why is the first of these syllogisms correct, while the second is not?

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It was such logical problems that led philosophers to set up their artificial formal languages. In PREDICATE CALCULUS (the logical system dealing with quantifiers such as 'all' and 'some') the problem is solved by expressing (4)*a* in quite a different way from (3)*a*. All propositions which, like (4)*a*, contain quantifiers, are represented in a form which involves the use of variables such as *x* and *y*. While (3)*a* can be represented simply as 'B*a*', where B is a predicate 'beautiful' and *a* is an argument 'Daphne', (4)*a* must be symbolized more elaborately as

$(\exists x)\ (Px\ \&\ Bx)$

(i.e. 'There exists an *x*, such that *x* is a person and *x* is beautiful'.) [The symbol $\exists$ here represents the so-called *existential quantifier*, which in the English language is often expressed by *some*.]

This problem, which the logician has solved by a special notation, is now also a challenge to the semantically-inclined linguist, who has to construct a system of semantic representation which will reflect the same difference as is reflected in the logical calculus. But the linguist operates with constraints different from those of the logician. He not only has to find the simplest rules for characterizing the logico-semantic representation of sentences, but has to take account of:

(a) *The actual facts of language usage.* Whatever propositions native speakers of a language find meaningful, meaningless, synonymous, inconsistent, etc., are part of the data the linguist has to explain. He must not stray into any idealized or artificially normalized systems of logic.
(b) *The place of logical semantics in the overall account of language.* This means that he must provide rules or other formalisms which show the relation between semantics and syntax on the one hand, and semantics and pragmatics on the other. Logic, which is an autonomous system for the logician, is not so for the linguist.
(c) *The psychological plausibility of semantic descriptions.* For the linguist, 'natural logic' means the actual mental apparatus with which people think and express their thoughts rationally. Certain conventions of logical calculi – e.g. that left-to-right order on the page is significant – are not particularly plausible from the psychological point of view: there is no reason to suppose that the human mind apprehends logical relations in a linear way. So again, what is best for the logician is not necessarily best for linguistic semantics.

For these reasons, the 'natural logic' which we attempt to describe in linguistics is not necessarily the same thing as the formal logics developed in philosophy. In fact linguists differ, and logicians differ, in the extent

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to which they see a coincidence in the goals of logic and of natural language semantics. On the one hand, it can be pointed out that, in addition to the standard propositional calculus and predicate calculus already mentioned, logic now provides us with a wealth of different calculi systematizing various areas of natural language semantics: modal logic (dealing with concepts such as 'possibility' and 'necessity'), tense logic (dealing with the relation between propositions and their time reference), and so on. On the other hand, it can be pointed out that even with these augmentations, there are vast areas of meaning on which the logician has scarcely cast an eye: it is easy, therefore, for him to work with certain simplifying assumptions (e.g. that nouns denote sets of individuals, that adjectives denote discrete properties) which do not stand up to the evidence of even such simple sentences as 'Wool is warm'. Thus while some linguists prefer to stick as far as possible to formal logical notations, others, such as myself, take the view that standard formal logics do not necessarily provide the best model for semantic representations. But as George Lakoff has remarked, 'natural logics are ... mythical beasts'. Such is the complexity of the field, that all efforts made so far must be regarded at best as a promising beginning. There is hope that the approach to semantics based on formal logic may eventually find a meeting-place with more informal and broadly-based models such as the present one.

Finally, a warning: it is generally assumed that the principles of such a natural logic must be largely common to all languages; but at the present stage of investigation, this is little more than an attractive conjecture, in keeping with recent universalist tendencies in linguistic thought (see pp. 26–7).

Actualization

For present purposes, describing 'natural logic' means characterizing the propositions of a language such as English in such a way as to be able to show what relations exist between them, or between them and their parts, whereby we are able to draw inferences or conclusions about their truth, falsehood, meaningfulness, etc. This is, indeed, equivalent to the task of accounting for basic statements as presented in this book, and therefore assigning semantic representations to sentences, as understood in Chapter 8, is the same thing as assigning them a 'logical form'.

But only part of the job has been attempted so far. In Chapter 8, we dealt with the predicational content of propositions, but not with propositions themselves. Thus each of the following exemplifies the predication 'girl ride horse':

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(5) *a* The girl rode a horse
b The girl didn't ride a horse
c Did the girl ride a horse?
d The girl's riding of a horse
e For the girl to ride a horse

but only *a* and *b* are propositions, and can be described as being true or false. They are 'anchored in reality', or actualized, in a way that is not the case with *d* and *e*, for instance. One syntactic difference is that *a* and *b* are expressed by a clause with a FINITE verb, with a tense form (*rode* versus *rides*, for instance) which marks it as describing something which happened at a particular time (past rather than, for example, present). Another syntactic difference is that the clause is in the declarative mood, which means it has the effect of asserting something, rather than of asking a question (as in *c*).

But these overt attributes are not enough to make a predication a fully specified proposition. An additional factor, which distinguishes *a* from *b*, is the contrast between positive and negative: a claim that the circumstance described in the predication corresponds to some reality is made in *a*, but not in *b*. Moreover, there is the assumption, in *a*, that both 'the girl' and 'a horse' refer to something which exists. Without this postulate of existence, *a* could not be regarded as a truth-claim about anything. Notice, in this connection, the difference between the *definite* expression *the girl* and the *indefinite* expression *a horse*: the definite article *the* brings with it an assumption about the existence of a girl not only in *a*, but in *b–e*. On the other hand, the indefinite article *a* postulates the existence of a horse only in *a*.

The pinning of a predication down to a claim about reality – what may be called its propositional ACTUALIZATION – is a combination of the above factors. Only if the conditions of actualization are fulfilled are we in a position to judge the circumstances under which something is true or false. This has an important bearing on the validity of basic statements. Consider, for example, the entailment statement:

(6) 'The girl rode a stallion' entails
(7) 'The girl rode a horse'.

This appears to be a straightforward case of entailment according to the rule given on p. 135. But one can imagine a case in which the entailment would not hold, because (6) and (7) would be referring to different events: for instance, (6) could refer to a girl called Joan riding a horse on 27 January 1981, and (7) could refer to a girl called Daphne riding a horse on 28 January 1982. Hence the truth of (7) follows from that

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of (6) only on two assumptions: (i) that the girl referred to in (7) is the same as the girl referred to in (6); and (ii) that the past time referred to in (7) is the same past time as is referred to in (6). More generally, the relations of truth-value with which natural logic is concerned depend considerably on assumptions of COREFERENCE (i.e. assumptions that different arguments or predicates refer to the same 'piece of reality'). One way to insure basic statements take this into account is to include in the semantic representation of propositions variables such as x and y, functioning as what are called *referential indices*. By attaching the same variable (x) to 'girl' and the same variable (t) to 'rode' in (6) and (7), one indicates that the girl and the time are identical in both cases:

(6a) '(girl_x . $\text{RIDE}_{\text{at time } t}$. stallion)' entails:
(7a) '(girl_x . $\text{RIDE}_{\text{at time } t}$. horse)', but does not entail:
(7b) '(girl_y . $\text{RIDE}_{\text{at time } u}$. horse)'.

However, I shall argue that natural languages (unlike formal languages) do not operate with variables in this sense. For this purpose, it will be necessary to discuss the nature of the contrast between definite and indefinite reference.

Definiteness

The contrast between definiteness and indefiniteness is a very general semantic phenomenon, most clearly manifest in English in the definite and indefinite articles *the* and *a/an*. The contrast between the two words is unlike any of the semantic oppositions which are handled in componential analysis. Notice, for example, that 'Peter is *the* manager' and 'Peter is *a* manager' are not inconsistent with one another; on the contrary, the former proposition entails the latter. So in this respect, the definite article adds a specifying element of meaning which is simply absent from the indefinite article. On the other hand, while 'John entered a castle' entails 'John entered a building', it is misleading to say that 'John entered the castle' entails 'John entered the building': this is because there is no guarantee that 'the castle' and 'the building' are coreferential. In fact, as we have seen, there is no guarantee that 'John entered the castle' is synonymous even with 'John entered the castle', since without an indication of coreference, we do not know whether the same castle is meant. So the definite article creates exceptions to the relations so far assumed between hyponymy, synonymy and basic statements.

The use of the definite article must actually be explained in *pragmatic* rather than in purely *semantic* terms; i.e. to interpret *the*, we have to relate it to a particular speech situation, and to assumptions made by

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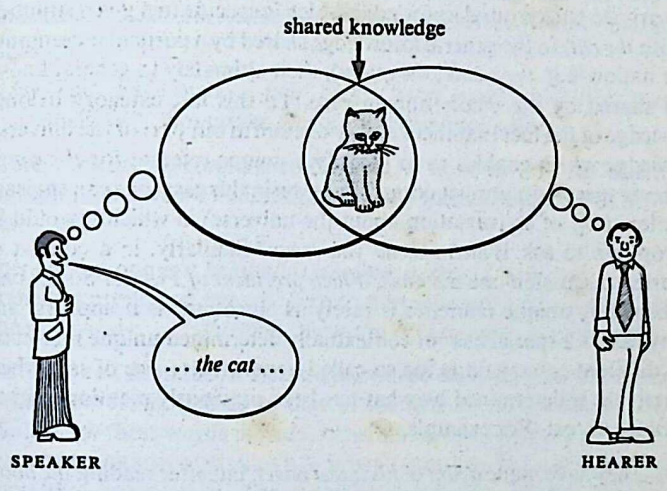
the speaker about the hearer. In essence, a phrase *the x* conveys a presupposition, by the speaker, that there is some *x* that can be *identified uniquely in the contextual knowledge shared by speaker and hearer*. In visual terms:



'Shared knowledge' means that if I say *Where's the cat*, I take it for granted that the person I am addressing is aware of which cat I am referring to. 'Uniquely' means that the addressee must be able to select the one cat in question from all other referents of the word *cat*. And 'contextual knowledge' means that this selection is determined by what background information is relevant to the particular speech situation. So, for example, the reference of *the cat* will be clear in a domestic context where husband and wife are talking about their sole feline pet; but if they have two cats, or if the husband is talking to a colleague at the office, the reference of *the cat* will probably be unclear. The decision to use *the* rather than *a*, then, is a matter of appropriateness to situation, and, what is more, the reference of *the x* is liable to vary from one situation to another.

These basic pragmatic conditions for definite reference can be generalized to cases which apparently differ from one another. For example, the condition of 'uniqueness' does not seem to apply to plural phrases such as *the children*, *the flowers*, *the novels*; but actually it does apply, in the sense that such phrases pick out a unique *set* of referents; thus *the children* on a particular occasion will refer to, say, John, Chloe and

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Lionel, rather than Chloe, Margaret and Bill. Further, it might be felt that contextual knowledge is not involved in the interpretation of phrases like *the sun*, *the stars*, *the President of France*, where there appears to be only one possible referent or reference-set that can be intended. But 'contextual knowledge' should be understood as variable in generality, from private background knowledge which is specific to a given situation (as with *the cat*) to the general knowledge shared by a particular community or nation (e.g. *the castle*, *the queen*), then ultimately to general knowledge shared by the whole human race. To this last category belongs knowledge of the fact that there is only one sun in our part of the universe, knowledge which enables us to identify a unique referent for *the sun* in whatever speech situation it occurs. But even in this case, one can envisage a context (e.g. of conversation about the universe) in which it would be appropriate to ask *Which sun do you mean?* Similarly, in a context of historical discussion one may ask *Which president of France?* So the case of absolutely unique reference is rarely as 'absolute' as it appears, and in any case is a special case of contextually determined unique reference.

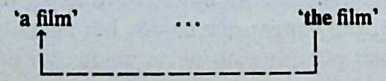
A different case again is the so-called ANAPHORIC use of *the*, where the referent is determined by what has been previously mentioned in an utterance or text. For example:

(8) 'They have made *a film* of *his latest novel*; but after reading *the book*, I found *the film* a great disappointment.'

The referents of *the book* and *the film* in (8) are made clear by the fact that a film and a novel have already been mentioned earlier in the sentence. But this, once more, is a special case of 'shared contextual knowledge', for by the earlier mention of the film and the novel, the speaker has incorporated these into the knowledge which the hearer now shares with him.

Coreference

This brings us back to the topic of coreference; for it is clear that in (8), 'the film' and 'the book' COREFER to (i.e. have the same referents as) 'a film' and 'his latest novel' respectively. The coreference moreover is a one-directional relation, the definite article in *the film* signalling coreference to *a film*, rather than vice versa. We can visualize it as follows:



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This is why it is inappropriate to represent coreference simply by the use of variables such as *x* and *y*, as in (6a)–(7b) above. What is needed, in Signese, is a way of symbolizing the meaning of the definite article, and some way of symbolizing the relation of coreference it contracts with other elements. For the feature of definiteness, I shall use the bold-face word **the**, and for coreference, I shall use matching prime markings: e.g. *'....', "....":*

(8a) 'They have made *a film'* of *his latest novel"*; but after reading **the** *book"*, I found **the** *film'* a great disappointment.'

Before considering coreference further, let us look at three classes of common words whose definitions normally include a feature of definiteness:

personal pronouns: *he/him/his, she/her, it, they, I, you*, etc.
reflexive pronouns: *himself, herself, themselves, myself, yourself*, etc.
deictic words: *this/that, these/those, here/there, now/then*, etc.

The feature of definiteness I have symbolized **the** belongs to the meaning of these words, as well as to that of the definite article. However, the definition of these words includes other features as well; for example *she* means '**the** PERSON SINGULAR —MALE', *it* means '**the** —PERSON', *they* means '**the** —SINGULAR'. The deictic or 'pointing' words *this* ('**the** NEAR') and *that* ('**the** —NEAR') differ in terms of an opposition of 'proximity', and the adverbs *here/there, now/then* also contrast in terms of this opposition: for example *now* can be paraphrased by *at this time*, and *then* by *at that time*. The precise interpretation of the opposition ±NEAR is an interesting pragmatic question in its own right – but we must be content to note here that this opposition is systematically reflected in a number of different lexical contrasts.

All these types of words have the element of unique, contextually determined reference which we associate with the definite article; this is the justification for representing their meanings as containing the definite feature **the**. However, they differ in the extent to which they are associated with coreference. The third person pronouns *she, they*, etc., are almost always used coreferentially, to refer to something mentioned elsewhere in the text, whereas the deictics are more often used with extra-textual, situational reference. The reflexive pronouns, however, are generally used anaphorically, and indeed their principal function is to establish a coreferential relation with some element (normally the subject) of the same sentence. So the following is a normal use of a reflexive pronoun:

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(9) 'Susan admires herself' (susan' . ADMIRE . the' −MALE)

Other words and word-forms express definiteness in perhaps a less obvious way: notably proper names and relative pronouns. Proper names clearly incorporate the quality of uniqueness, and indeed they have the contextual variability of reference which we have associated with the definite article. So we cannot assume, any more than for (6)–(7) 'The girl rode a stallion/horse', that the following entailment holds:

(10) 'Daphne rode a stallion' entails 'Daphne rode a horse'.

This entailment is only guaranteed if the two names are coreferential, i.e., if these propositions are about the same person:

(10a) 'Daphne' rode a stallion' entails 'Daphne' rode a horse'.

Because it shares these characteristics of definite noun phrases and pronouns, *Daphne* is best defined semantically simply as 'the one named *Daphne*', and similarly for other proper names. Such a definition captures the common observation that proper nouns do not appear to have contrastive meaning (i.e. do not have componential definitions) in the sense that common nouns like *girl* and *book* do; it is even doubtful whether a name like *Daphne* should be marked +PERSON or −MALE (i.e. as being by definition a person's name or a girl's name), since by fiat, one may decide to give the name *Daphne* to a boy, a car, or a mountain. (It does seem, however, that all proper names incorporate the feature COUNTABLE, and most of them the feature SINGULAR.)

Also relative pronouns such as *who* and *which* have an element of definiteness in their meaning, as we note from the following parallel:

(11) They have *a parrot'. It'* is called Montague.
(12) They have *a parrot', which'* is called Montague.

The coreference between *a parrot* and *which* in (12) provides the clue to the analysis of the 'linking argument' mentioned in the discussion of downgraded predications (pp. 144–8). In a relative clause construction such as *a man who rides a horse*, the meaning of *who* is represented as 'the PERSON' (as opposed to *which*, which means 'the −PERSON'), and the whole relative clause expresses a downgraded predication:

(13) HUMAN MALE ADULT' ⟨the' PERSON . RIDE . □SPECIES⟩
'a man who rides a horse'

Here, the prime markings ('....') indicate that the (expressed in the relative pronoun) corefers to the whole content of the argument outside the downgraded predication. A similar analysis is applied to downgraded

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predications which are incorporated in the definitions of single words; for example:

(14) PERSON′ ⟨the′ . RIDE . □SPECIES⟩ 'equestrian', 'horserider'
(15) ⟨the′ . RIDE . □SPECIES⟩ 'equestrian' (adjective)

And a more complicated definition for *equestrian* in the phrase *equestrian statue* illustrates the same analysis repeated in two stages of downgrading:

(16) ⟨the′ . DEPICT . PERSON″ ⟨the″ . RIDE . □SPECIES⟩⟩
'(statue) which depicts a person that rides a horse'

While these examples illustrate the use of the definite feature and co-reference in the explanation of qualifying predications, it is now possible to see how the same principle applies to modifying ('adverbial') predications such as the following:

(17) (john . MEET ⟨the′ . PLACE . bus-stop⟩. susan)′
'John met ⟨at the bus-stop⟩ Susan', i.e.
'John met Susan at the bus-stop'.

In this case the coreferential link is between the definite term of the downgraded predication, and the whole of the main predication; in other words:

'(John met Susan)', which′ took place at the bus-stop'.

Notice that coreference is not only a relation between a definite feature and an argument, but also between a definite feature and a predication. The implication of this is that the property of 'referring to something' is not restricted to arguments; for just as arguments may refer to particular objects in the world, so may predications refer to particular events and states of affairs. Thus just as the argument 'the cat' in 'The cat sat on the mat' refers to a uniquely identified animal, so the predication 'the meeting at the bus-stop' refers to a uniquely identified event. The contrast between definite and indefinite reference applies both to arguments and to subordinate predications.

Zero Expression

Finally, there is yet another way in which the definite feature may be manifest in linguistic form – and this is by ZERO EXPRESSION, similar to the zero expression which occurs with null arguments (p. 137). We have seen that a null argument (∅), which signifies maximum unspecificity of indefinite meaning, is realized by the absence of syntactic expression, and we shall now see that an argument containing only the feature the, representing maximum unspecificity of definite meaning, can be realized

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in the same way. If we consider the meaning of sentences like *Can I join?* and *He's winning*, it is obvious that the absence of an object signals some understood, contextually determined element, such that in given contexts these sentences might be paraphrased *Can I join the club/society?* or *He's winning the race*. Other examples of such omissions are:

'They have a parrot called Montague' (i.e. '... WHICH IS called ...')
'He's calling' (i.e. '... calling on THEM/US/YOU')
'She's gone away' (i.e. '... away from HERE/THERE')

Coreference and Meaning

The preceding discussion of definiteness provokes a question about the demarcation of semantics. I have shown that the interpretation of definiteness involves both knowledge of context and knowledge of reference; but also I have argued earlier (pp. 13, 69–70) that conceptual semantics cannot attempt to include an account of what linguistic expressions refer to, or how they are interpreted according to context. Should we not, then, exclude definiteness (and the contrast definite/indefinite) from semantics altogether?

My answer to this is that we have to account for certain things about definiteness. We have to account for the systematic contrasts between, e.g., 'the girl' and 'a girl', in order to explain the way in which definiteness affects basic statements of entailment, etc. (see p. 156). We also have to incorporate into the semantic model an explanation of coreference or else we shall be unable to state the conditions under which entailments, etc., do hold between propositions containing definite expressions. Coreference is needed, too, for the analysis of downgrading, and for the explanation of the non-synonymy of *Susan admires herself* and *Susan admires her* – which differ semantically only in that the former has coreference between the pronoun and the subject. But notice that we only need to identify *equivalence* of reference; there is no need for a semantic model to meddle with the encyclopedic knowledge which enters into the characterization of possible referents of an expression. Coreference is part of meaning, but reference is not.

For Signese, therefore, the two notational additions already introduced are all that is required for this aspect of meaning: a semantic primitive **the**, and an open-ended set of prime markings to indicate coreference: ', ", ‴, etc. There is no requirement that all occurrences of **the** should be accompanied by prime markings, since, as we have already seen, in many cases **the** has purely extra-linguistic reference. What this means is that the semantic notation represents as ambiguous only those cases of **the** where coreference distinguishes different interpretations:

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(18a) *Ann'* told her sister to fetch *her'* purse
(18b) Ann told *her sister''* to fetch *her''* purse
(18c) Ann told her sister to fetch her purse

The above sentence has a threefold coreferential ambiguity: in (18a) 'her' corefers to 'Ann', in (18b) 'her' corefers to 'her sister', and in (18c) 'her' has no coreference, but refers extra-linguistically to some third party. But the notation does not distinguish, for (18c), the vast number of possible contextually determined referents of 'her'. Drawing the line in this way between (semantic) ambiguity and referential indeterminacy seems satisfactory; for coreference, but not for extra-linguistic reference, we can make a precise prediction of what varying readings of the same sentence are possible.

There is a better reason for arguing that coreference is a necessary part of semantic description. Notice that if (18) were amended to (19), one of the interpretations, (18b), would be ruled out:

(19) Ann told her brother to fetch her purse.

There would be no way in which we could make 'her' corefer to 'brother', for the obvious reason that 'brother' contains the feature +MALE, while 'her' contains the feature −MALE. Hence we see that semantic relations of hyponymy and incompatibility directly control the possibility of coreference between arguments. It is this fact that accounts for the oddity of:

(20) * 'That man admires herself'
(the −NEAR HUMAN MALE ADULT' . ADMIRE . the' −MALE)
(21) * 'the house whom Jack built'
the house −PERSON' ⟨the' PERSON . ←BUILD . jack⟩

In these cases, an obligatory coreference relation is blocked by the incompatible features MALE/−MALE and −PERSON/PERSON respectively. Such absurdities patently cannot be ignored by a semantic theory, and to explain them, as well as other semantic implications of coreference, a general rule can be stated:

Rule of coreference:

If two arguments have the same reference, they share the same meaning; i.e. if the *a* corefers to *b*, then the semantic features of *b* also belong to the *a*.

Like a contextual redundancy rule, this rule in effect transfers features from one element to another. In (20) and (21) above, it will result in the clash of two contradictory features (MALE −MALE, −PERSON

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PERSON) in the same argument. Another result of this rule is that two propositions which differ from one another only in that they contain coreferential arguments will be shown to be synonymous. For example, 'My sister is happy' and 'She is happy' are synonymous so long as 'she' corefers to 'my sister'.

Tense and Time

Tense of the verb, as noted earlier, has a role in the actualization of predications: we cannot tell whether a proposition is true unless we can determine the point or period of time to which it applies. The meanings of tenses are in fact a special case of definite reference, where the definite feature occurs within a modifying predication of time. Thus if 'now' is analysed as 'this time', containing the deictic meaning 'the NEAR', then the present tense (= 'at this time') can be represented ⟨the′ . TIME . the NEAR⟩, where the first the corefers to the main predication. The past tense, on the other hand, indexes the event to a definite (given) time in the past, and may be represented ⟨the′ . TIME . the″ ⟨the″ . BEFORE . the NEAR⟩⟩ – i.e. 'which happen at the time before now'. In this respect, the meaning of the past tense in *Jane rode a horse* contrasts with the indefinite past meaning of the perfective aspect (*Jane has ridden a horse*) which may be represented as follows: ⟨the′ . TIME . ∅″ ⟨the″ . BEFORE . the NEAR⟩⟩, i.e. 'which happen at *a* time before now'. The future meaning, of *Jane will ride a horse*, on the other hand, is represented by substituting the converse of 'before': ⟨the′ . TIME . ∅″ ⟨the″ . ←BEFORE . the NEAR⟩⟩, i.e. 'which happen at a time after now'.

Coreference thus enters into the interpretation of tense, and indeed the linguistic phenomenon of 'sequence of tenses' depends on this fact. It is on this basis that we can now return to the initial problem of actualizing predications so that entailment relations can be fully specified. The provisional formulae of (6a)–(7a) on p. 156 can now be more precisely symbolized as follows:

(6b) (the′ girl . RIDE ⟨the″ . TIME . the‴ ⟨the‴ . BEFORE . the NEAR⟩ . a stallion)″ 'The girl rode a stallion' entails:

(7b) (the′ girl . RIDE ⟨the″ . TIME . the‴ ⟨the‴ . BEFORE . the NEAR⟩ . a horse)″ 'The girl rode a horse'

where the indices match, and therefore make sure that the two propositions refer to the same event.

Logical Operators

We have now reached a stage at which the whole meaning of certain

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simple declarative sentences can be accounted for (although the formulae in (6b) and (7b) above are, of course, still semi-informal). But it has been necessary to introduce a new kind of semantic element – the feature **the** – the nature of which does not fit precisely into the previously discussed models of componential and predication analysis. In fact, the meaning **the** has to be explained in terms of a rule (the rule of coreference) which is peculiar to **the** itself. In the rest of this chapter I shall discuss, necessarily very briefly, semantic elements which, like **the**, are defined in terms of their own rules. These elements will be called LOGICAL OPERATORS, and my aim will be to show their function in determining the truth conditions of propositions.

The notion of 'logical operator' goes back to a traditional distinction between 'logical words', such as *not*, *if*, *all*, *or* and *true*, and 'content words' such as *cow*, *tree*, *work*, *tall* and *over*. 'Logical words', as compared with 'content words', are very difficult to define or paraphrase; they do not seem to designate anything belonging to our experience of the real world, but rather seem to have a semantic function internal to the language system itself. But here, as elsewhere, it is inviting unnecessary difficulty to deal with meaning in terms of lexical or syntactic units. If we try to apply the 'logical' and 'content' categories to words, we find it necessary to recognize a mixed category of words which are partly of one type, and partly of the other. There is no problem in placing (say) *not* in the 'logical' category and *cow* in the 'content' category. But in the following list of words, there is, as we see, a mixture of the two functions:

	LOGICAL ELEMENT	CONTENT ELEMENT
never	negation	+ time
somewhere	quantification	+ place
who	interrogation	+ person
come	'thisness' (definite meaning)	+ movement

In fact concepts such as 'negation' and 'quantification', like definiteness, are each shared by a range of different words. Since these logical elements, like the content elements, are only *part* of the definitions of such words, it is reasonable to treat them, like the content elements, as semantic components. In support of this, it is worth noticing that the logical elements enter into binary oppositions comparable to those of componential analysis. The relation between 'true' and 'false', for instance, is a binary taxonomy, parallel to that between HUMAN and −HUMAN. Similarly the quantifiers 'all' and 'some' contrast as terms of an inverse opposition (p. 107), just as do the modal operators 'possible' and

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'necessary', or the features which distinguish 'become' from 'stay'. Apparent exceptions to this contrastive pairing of logical operators are 'the' and 'not', but it may be argued that even here there are semantic contrasts 'positive/negative' and 'definite/indefinite', of which only the marked terms ('negative' and 'definite') are lexically realized. This contrastiveness shows the basic continuity between 'content' features and 'logical' features; in fact, the distinction is by no means a clear-cut one, since certain oppositions, e.g. the relations of 'cause', 'time', 'place', 'manner', etc., which underlie many adverbial categories, in some ways seem to hold an intermediate position between 'logical' and 'content' features.

In spite of this, I shall not represent logical operators in the normal componential way; instead I shall do my best to preserve the readability of Signese by adding to it the following self-explanatory symbols for representing logical operators: **not, and, or, some, all, if, true, false**, etc. This means that I shall continue the practice, begun with **the**, of writing these elements in bold face, and using ordinary English words to represent them, irrespective of the oppositions they enter into. To use compound symbols such as 'QUANTIFIER △SOME' for 'some' and 'QUANTIFIER ▽SOME' for 'all' would probably confuse more than it would help.

The term 'logical operator' reflects the fact that these meaning elements are often thought of as performing operations; they are rather like addition and subtraction in arithmetic, except that the things they operate with are not numbers, but propositions. Terms like negation, quantification, interrogation, etc., reinforce this impression, and provide an important clue when we come to ask what is the function of these operators in human language. The answer to this question appears to be that these elements greatly increase the power of human thinking, because they are instruments with which we can explicitly manipulate the categories and relationships of semantic content; they enable us not only to describe experience, but evaluate, argue about, and draw conclusions from, the evidence of experience, using the regulative concept of truth. They are the controlling elements, as it were, of the semantic system.

It is not surprising, then, that there are significant correlations between logical operators and the categories of componential-predication analysis. **If**, for example, correlates with the notion of entailment: if a proposition *X* entails another proposition *Y*, then the compound proposition *X*→**if** *Y* is true by definition:

(22) 'Robert' writes books' entails 'He' writes'; therefore 'If Robert' writes books, he' writes' is a tautology.

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Similarly, **not** correlates with inconsistency; **and** and **or** respectively with the combinatory and contrastive axes of componential analysis; **true** with tautology; **false** with contradiction; and so on. It will be noticed, for example, that **not** duplicates the function of a binary taxonomy in a pair of sentences like:

(23) 'Her mother is not dead' = 'Her mother is alive'
(−LIVE) (+LIVE)

But elsewhere, for instance, in colour terminology, the negative operator enables us to superimpose the model of +X and −X on an area of meaning which is not inherently structured in such terms:

(24) 'My car is not red' = 'My car is blue or green or brown or...'

Logical operators give rise to special classes of basic statement, and so in addition to the rules for entailment, inconsistency, tautology and contradiction in Chapter 8, separate rules have to be stated for each logical operator. To do this exhaustively would be to write a kind of 'dictionary' of logical operators, from which a complete 'natural logic' could be derived. All I can do in the remainder of this chapter is to give a small sample of what that dictionary would have to contain, confining myself to **not, and, or, all** and **some.**

1. The negative operator **not**

For any positive proposition *X*, a corresponding negative proposition (**not**:(*X*)) can be formed. In the negative proposition, **not** constitutes a one-place predicate governing (*X*). Among the logical rules for **not** are:

(A) (*X*) is inconsistent with (**not**:(*X*)): e.g. 'These scissors are sharp' is inconsistent with 'These scissors are not sharp'.
(B) If (*X*) is a tautology, (**not**:(*X*)) *is a contradiction*; e.g. 'Apples are fruit' is a tautology, so 'Apples are not fruit' is a contradiction.
(C) Conversely, if (*X*) is a contradiction, (**not**:(*X*)) is a tautology; e.g. 'Apples are animals' is a contradiction, so 'Apples are not animals' is a tautology.

We assume that **not** constitutes a one-place predicate in these examples because for each positive proposition there is one and only one negative proposition. Propositions containing double negation, such as 'John did not not open the door', are exceptional in natural language, and if they occur, they are explained in terms of repeated subordination: (**not**:(**not**:(*X*))). For logical operators such as **not, some** and **all**, the predication which they govern is called their logical SCOPE. Everything that is within the scope of negation is semantically affected by **not**. But

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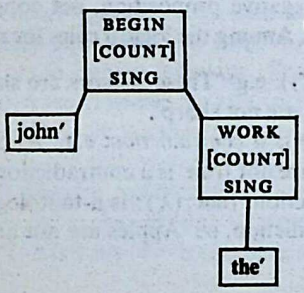
the effect of placing one negative in the scope of another is to cancel one negation by another. Thus a fourth rule for negation is:

(D) (not : (not : (X))) is synonymous with (X)

But strictly speaking, not is not a predicate, but a feature of a predicate. To show this, I must mention a further semantic opposition, that between EVENTS such as 'hit', 'say', 'fall', 'become', 'cause' and STATES such as 'be rich', 'be old', 'sleep', 'own', 'consist of', etc. This distinction runs through verb and adjective meanings (most verbs refer to events, and most adjectives to states), and actually corresponds to the 'countable'/'uncountable' distinction which applies to nouns. Just as countable nouns like *table*, *girl*, *house* refer to entities with spatial boundaries, so event verbs refer to happenings with temporal boundaries. Therefore the concept of plurality applies to both: countable entities can form groups, and events can form sequences. In semantic terms, the difference is simply that events are predicates rather than arguments. I shall thus represent the state/event contrast by adding the feature COUNTABLE or −COUNTABLE to predicates.

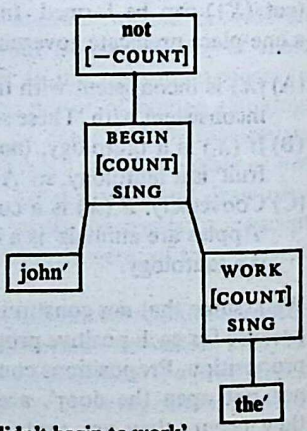
Now, it happens that when a positive event is negated, it becomes a state. 'John began to work', for instance, when negated, becomes 'John didn't begin to work', which means that John *remained* in a state of *not* working. To not, therefore, is added the feature −COUNTABLE. The following dependency diagrams show these structures (COUNTABLE and SINGULAR are abbreviated to COUNT and SING):

(25)



{'John began to work', 'John started work'}

(26)



{'John didn't begin to work', 'John didn't start work'}

But if the predication 'until nine o'clock' is added to (25) and (26), one of them becomes unacceptable:

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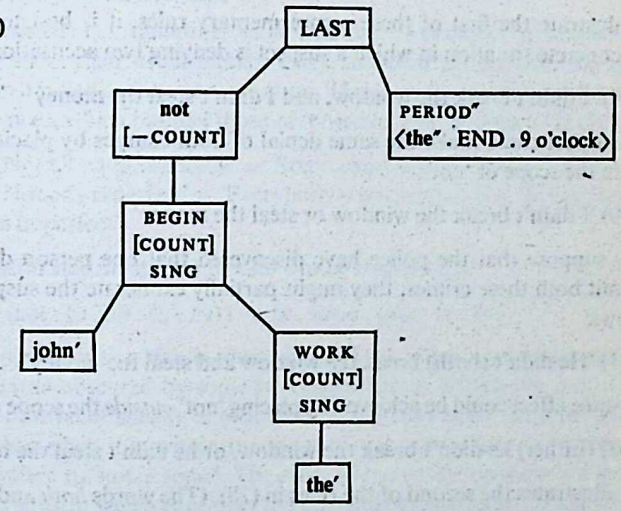
(25a) * 'John started work until nine o'clock'
(26a) 'John didn't start work until nine o'clock'

What is the reason for this asymmetry between the positive and negative constructions? *Until* is a preposition of duration, meaning roughly 'lasting for a period ending at time *x*'. But duration is a property of states rather than events; i.e., the predicate LAST requires as its initial term a predicate containing the feature [−COUNT]. As the diagram below indicates, this condition is met by the negative predicate of (26), though not by the positive predicate of (25):

(26a)



{'John didn't start work until nine o'clock'
'John's not working lasted for a period ending at nine o'clock'

2. *The operators* and *and* or

An interesting type of opposition exists between the two coordinative operators and and or: they are similar to members of inverse oppositions such as 'possible'/'necessary', except that not only one, but both of their terms are predicates. It will be remembered (from p. 107) that the distinguishing property of inverse oppositions is that they enter into a special equivalence relation, whereby substitution of one feature for the other preserves synonymy if accompanied by a shift of the negative. This equivalence relation can now be stated formally (using ≡ for the relation of synonymy):

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(27) (**not**:(△POSSIBLE:(*X*)) ≡ (▽POSSIBLE:(**not**:(*X*))
(**not**:(▽POSSIBLE:(*X*)) ≡ (△POSSIBLE:(**not**:(*X*))

e.g.: 'It is not possible that Mary is asleep' ≡
'It is necessarily the case that Mary is awake'
or more simply expressed:
'Mary can't be asleep' ≡ 'Mary must be awake'

A similar rule works for **and** and **or**, but this time the negative is transferred into *both* subordinate predications:

(28) (**not**:((*X*) . **or** . (*Y*))) ≡ ((**not**:(*X*)) . **and** . (**not**:(*Y*)))
(**not**:((*X*) . **and** . (*Y*))) ≡ ((**not**:(*X*)) . **or** . (**not**:(*Y*)))

To illustrate the first of these complementary rules, it is best to think of a concrete situation in which a suspect is denying two accusations:

(29) 'I didn't break the window, and I didn't steal the money'

The suspect could make the same denial of both charges by placing 'or' within the scope of 'not';

(30) 'I didn't break the window or steal the money'

Now suppose that the police have discovered that one person did not commit both these crimes; they might partially exonerate the suspect as follows:

(31) 'He didn't (both) break the window and steal the money'

The same effect could be achieved by placing 'not' *outside* the scope of 'or':

(32) (Either) he didn't break the window, or he didn't steal the money.

This illustrates the second of the rules in (28). (The words *both* and *either* in (31) and (32) are emphatic syntactic markers of scope, and do not affect the logic of the *and/or* relation.)

Clearly **and** and **or** are reciprocal predicates, so that the following rules also obtain:

(33) ((*X*) . **and** . (*Y*)) ≡ ((*Y*) . **and** . (*X*))
(34) ((*X*) . **or** . (*Y*)) ≡ ((*Y*) . **or** . (*X*))

In fact, then, **and** and **or** are semantically complex elements: they share a reciprocal relation of conjunction, and also contrast in terms of an opposition very similar to an inverse opposition.

Additional rules connected with coordination are the following:

(A) ((*X*) . **and** . (*Y*)) entails (*X*) e.g. 'John went to the match and Mary went to the match' entails 'John went to the match'

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(B) (X) entails $((X)$. **or** . $(Y))$ e.g. 'John went to the match' entails 'John went to the match or Mary went to the match'

(C) $((X)$. **and** . **(not** : $(X)))$ is a contradiction
e.g. 'John is married and (John) is not married'

(D) $((X)$. **or** . **(not** : $(X))$ is a tautology
e.g. 'Either John is married or John is not married'

There are many further complications connected with coordination – notably the problem that coordinative propositions can have more than two terms. But there is no space to elaborate on these matters any further.

3. The quantifiers **all** *and* **some**

The EXISTENTIAL quantifier **some** and the UNIVERSAL quantifier **all** (to give them their usual names) enter, as noted earlier, into the type of contrast called an inverse opposition. This is evident from the following equivalences, which parallel those of 'possible' and 'necessary' in (27):

(35) 'Not all paint is soluble' ≡ 'Some paint is not soluble'

(36) 'Nobody is perfect' ≡ 'Everybody is not perfect' (i.e. 'Every person is imperfect')

The general rule illustrated by (35) can be represented:

(35a) **(not** : $(a$. **all** . $(a$: $P)))$ ≡ $(a$. **some** . **(not** : $(a$: $P)))$

The opposite rule, which is illustrated in (36), is less easy to recognize, because it is obscured by some superficial lexical differences. But if we interpret the *no* of *nobody* to mean 'not + any', *any* being the form which *some* takes when it is within the scope of negation, then '*no*' is seen to be equivalent to 'not + some'. The *every* of *everybody*, on the other hand, is simply a form which expresses the universal quantifier in combination with singular meaning. In this light, it becomes clear that (36) illustrates an inverse equivalence of the following general form:

(36a) **(not** : $(a$. **some** . $(a$: $P)))$ ≡ $(a$. **all** . **(not** : $(a$: $P)))$

Notice that this inverse relation requires us to analyse the meaning of noun phrases such as *some people*, *all cars* in a more complicated way than that of other noun phrases we have met. Up to now, we have dealt with unquantified expressions such as *John*, *the girl*, *red ink*, etc., which have expressed the arguments in such predications as (john . LIKE . the girl) ('John likes the girl'). On the face of it, we might expect 'Some boys like the girl' to be analysed in the same way: but I have already pointed out (p. 153) that quantified noun phrases have a logic different from that of other noun phrases. The clearest evidence for this is that quantifiers

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can be independently negated. Thus corresponding to a sentence like *All nice girls like sailors* there are two negative sentences:

(37) Not all nice girls like sailors.
(38) All nice girls do not like sailors. (i.e. 'All nice girls dislike sailors')

For this reason alone, it is necessary to represent quantifiers as belonging to a different predication from that of 'girls like sailors'. Of the two negative sentences (37) and (38), (37) expresses the true negation of 'All nice girls like sailors', because its meaning is inconsistent with that of the corresponding positive sentence. As mentioned on p. 167, this and many other logical contrasts introduced by the logical operators can be expressed in terms of the concept of *scope*. In (37), the quantifier is in the scope of the negative, whereas in (38) the negative is in the scope of the quantifier.

It is worth noting that in English, differences of scope need not be reflected in syntactic form. The sentence *Everybody didn't enjoy it* is ambiguous in terms of scope, and if we want to make its meaning clear, we have to use intonation.

(39) Everybody didn't enjoy it. (i.e. 'Nobody enjoyed it')
(40) Everybody didn't enjoy it. (i.e. 'Not everybody enjoyed it')

In (39), we make the voice fall on *everybody*, and keep it at a low pitch. In (40), we do the same, but make the voice rise a little from *enjoy* up to *it*. The result is a different meaning.

There are one or two other facts about quantifiers which need explanation. Firstly, quantifiers, like **and** and **or**, are semantically complex elements, combining one relative feature with one feature of an inverse opposition. Therefore a fuller way to symbolize them would be:

(41)

some	*all*
→QUANTIFY △SOME	→QUANTIFY ▽SOME

We may indeed add further features to 'some' to define hyponymic terms such as *many*, *a few*, and the numbers *one*, *two*, *three*, etc.:

(42)

many	*a few*	*much*	*three*
→QUANTIFY △SOME −SINGULAR ↑AMOUNT	→QUANTIFY △SOME −SINGULAR ↓AMOUNT	→QUANTIFY △SOME −COUNTABLE ↑AMOUNT	→QUANTIFY △SOME −SINGULAR 3 NUMBER

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Secondly, the formulae of (35a) and (36a) show the same argument *a* occurring twice, once in the quantifying predication, and once in the other predication. This symbol has a function similar to that of the variables *x*, *y*, etc., which occur in the formulae of predicate calculus (see p. 153). On p. 133 I said that symbols such as *a* and *b* were 'residual variables' for an unspecified set of features. So when the same symbol, *a*, occurs in two arguments, this means that the same set of features occurs in both places. Such semantic equivalence always occurs with quantifiers: the meanings of quantifier expressions can be spelled out in a sort of 'Pidgin English' as follows:

(43) (*a* . **some** . (*a* . *P* . *b*)) 'For some girls, girl like sailors'
(44) (*a* . **all** . (*a* . *P* . *b*)) 'For all girls, girl like sailors'

In this example, *a* represents the set of features HUMAN −ADULT −MALE −SINGULAR 'girls'. The relation between the two equivalent arguments cannot be one of coreference; that is, it would be wrong to analyse (43) in this way: (*a'* . **some** . (**the'** . *P* . *b*)). If we did this, we should end up postulating coreference between *a* and *both* occurrences of **the** in:

(45) (*a'* . **some** . (**the'** . LIKE . **the'**)) 'Some girls like themselves'

But this would be mistaken, because *a* refers to a *set* of girls, while the meaning of *themselves* specifies a relation of coreference between the two arguments of LIKE for each *member* of that set. There has to be a way of distinguishing between 'Some girls like themselves' and 'Some girls like girls'. We therefore must distinguish between a relation of coreference and a relation of what may be called COSEMY ('equivalence of sense'), which is exemplified in the repetition of the same argument *a* in (43), (44). But these two kinds of equivalence relation have something in common: they are both associated with zero expression. Coreferential **the**, as pointed out earlier, is frequently given no syntactic realization, and the same is true for the repeated element in a relation of cosemy. We shall look at further instances of this in the next chapter (p. 190).

Even so, there is a difference between the two arguments symbolized *a* in (43) and (44), and to this extent the formulae are incomplete. One of the arguments refers to girls collectively, as a *set*, and the other one refers to girls individually, as *members of that set*. If this contrast is symbolized ±SET, and is included in (43), the more complete formula reads as follows:

(43a) (*a* . **some** . (*a* . *P* . *b*))
[SET] [−SET]

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[Since the features [SET] and [−SET] are predictable from the quantifiers **all** and **some** (by contextual redundancy rules), however, I shall usually omit them.]

The 'set'/'member' distinction explains one apparent illogicality of English quantifiers. The universal quantification expressed by *every* seems to involve a strange mixture of singular and plural meaning. For example, *every planet* on the one hand makes reference to the entire set of planets, and on the other refers to each member of that set as an individual. This seeming self-contradiction is resolved in a way suggested by (43a) above:

(planet . **all** . (planet : SPHEROID)) 'Every planet is spheroid'.
[SET] [−SET]
−SING SING

The 'set'/'member' opposition, incidentally, is not restricted to sentences with quantifiers: in other kinds of sentence it can give rise to ambiguities. If we consider the interpretation of the sentence *The boys spend five pounds a week on beer*, it is not clear without context whether the figure of *five pounds* applies to the boys as a group ('five pounds altogether') or to the boys as individuals ('five pounds each').

Another kind of ambiguity is more directly attributable to quantification: there is a difference of meaning according to whether **some** is included in the scope of **all**, or **all** is included in the scope of **some**:

(46) Every boy knows some jokes.
(47) Some jokes are known by every boy.

We should expect (46) and (47) to have the same meaning, since one is the passive of the other. But in their most likely interpretations, they are clearly not synonymous. Of the readings (a) and (b) below, (a) is the meaning generally associated with (46), and (b) is that generally associated with (47):

(a) 'For every boy, it is true to say that there are some jokes that he knows'.
(b) 'There are some jokes which are known to every boy'.

Proposition (a) can be true in conditions where (b) is false. There is actually much disagreement on the interpretation of sentences like (46) and (47): some speakers feel that both interpretations (a) and (b) are available for both sentences, but that the preferred interpretations are as stated above. As before, the selection of interpretation is influenced by intonation. But for the present, I simply wish to point out that the two readings (a) and (b) can be represented in Signese by reversing the relation of scope between **some** and **all**:

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(a) (boy . **all** . (joke . **some** . (boy . KNOW . joke)))
(b) (joke . **some** . (boy . **all** . (boy . KNOW . joke)))

In accordance with the equivalence rule discussed on pp. 146–7 (see also pp. 257–9), these are equivalent to variant formulae in which the inner quantifying predication becomes a modifying predication:

(a) (boy . **all** . (boy . KNOW ⟨**the'** . ←**some** . joke⟩ . joke)')
'For every boy, boy know joke ⟨for some joke⟩'.
(b) (joke . **some** . (joke . KNOW ⟨**the'** . ←**all** . boy⟩ . boy)')
'For some joke, joke is known by boy ⟨for every boy⟩'.

It is these last formulae which are preferable, because they correspond very closely to the syntactic ordering of (46) and (47), and therefore simplify the relation between semantics and syntax:

(a) (boy . **all** . (boy . KNOW ⟨**the'** . ←**some** . joke⟩ . joke)')
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
(46) (0) *Every* *boy* *knows* (0) *some* (0) *jokes.*

Where the arrows end in a '0', the semantic argument has zero expression under the conditions of cosemy or definiteness already explained (pp. 161–2). In other respects, there is a one-to-one correspondence between the semantic and syntactic elements.

Quantifiers, Basic Statements and Actualization

It is now time to turn our attention to the role of quantifiers in 'natural logic'. In contrast to the definite operator **the**, the quantifiers are indefinite in meaning. We may see them, in fact, as making explicit and precise an ambiguity which is implicit in indefinite arguments. When discussing rules of entailment (pp. 134–6), I pointed out that the direction of entailment depended on whether an (indefinite) argument was given a *specific* or *generic* meaning. For example,

(48) 'The guards carried guns' entails 'The guards carried weapons'
(49) 'Weapons are forbidden' entails 'Guns are forbidden'

In (48) 'guns' and 'weapons' are specific, whereas in (49) they are generic. The entailment goes from 'guns' to 'weapons' in (48), but from 'weapons' to 'guns' in (49). Notice that the same ambiguity occurs in the singular, with the indefinite article: 'A gun is dangerous' will be interpreted generically, while 'A gun is firing' will be interpreted specifically. There are, however, cases where the specific/generic distinction seems indeterminate. A sentence such as *Cats like fish* is vague in that we are not

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sure whether it means 'Cats in general like fish in general', or 'Cats in general like some fish but not others', etc.

It can now be seen that the quantifiers **some** and **all** correspond to the specific and generic readings of arguments, but that they make these meanings explicit and determinate. So the rules of entailment on p. 135 can be stated more precisely for quantifiers:

(50) 'All weapons are forbidden' entails 'All guns are forbidden'
(51) 'The guards carried some guns' entails 'The guards carried some weapons'

Further, the traditional syllogisms of Aristotelian logic can be regarded as rules of entailment involving the quantifiers, the coordinators, and the definite operator **the**:

(a) 'All teenagers like pop-stars **and**
(b) the girl next door is a teenager' entails
(c) 'The girl next door likes pop-stars'

But it would be too time-consuming to go any further in the formulation of these rules.

The role of quantification in making the meaning of arguments precise brings us back, finally, to the topic of actualization. Quantifiers complement the definite operator **the** (in its association with coreference) in making clear the referential status of arguments and predications. In fact, the existential quantifier **some** is so called because it postulates existence, just as the definite operator presupposes existence. Unless semantic elements are pinned down by coreference or quantification, the possibility of variant interpretations of truth-claims remains open, and to this extent they are unactualized. If I assert 'All dogs are carnivorous', for example, it is clear that the discovery of one vegetarian dog will disprove my statement. But if I simply say 'Dogs are carnivorous', it is not clear. Does my statement permit exceptions, and if so, how many exceptions are permitted?

Conclusion

It obviously suits the needs of human thought and human communication to have both vague and precise ways of talking about things. In this chapter I have briefly surveyed the characteristics of the 'natural logic' of English, whereby the nature of truth-claims, and the relation of one truth-claim to another can be precisely specified. In analysing the actualization of predications as propositions, I have tried to demonstrate how conceptual semantics can be ultimately made answerable to basic statements, thus

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completing in outline the programme of semantic research proposed in Chapter 5.

To this end I have given specimen rules of entailment, tautology, contradiction, etc., for each of the logical operators examined in this chapter. Some of these rules serve to make more precise the makeshift rules stated in Chapter 8. Others specify logical relations between complex propositions and the simpler propositions which compose them.

But actualization is a matter of degree, and in practice the semantics of sentences, like the semantics of words, has its built-in tolerance of inexactitude. We cannot deny propositional status to utterances like *Dogs are carnivorous* and *Unicorns have horns* just because the conditions for verifying or falsifying these statements are unclear. For reasons such as this, the logic of natural languages is bound to be very different from current artificial systems of formal logic, and we have still much to learn about it.

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10. Semantics and Syntax

Language can be described (as it is described by Wallace Chafe, in *Meaning and the Structure of Language*, p. 15) as 'a system which mediates, in a highly complex way, between the universe of meaning and the universe of sound'. The subject of preceding chapters has been the semantic 'end' of language, in particular, the conceptual semantic representation of sentences. But it is artificial to try and divorce semantics from language as a total system of communication. A semantic theory is in reality only a 'sub-theory' of a total linguistic theory, and an important factor in the study of meaning is being able to account for the relation of the semantic representation of an utterance to its representations at other levels, and particularly at the level of syntax. By this means alone are we able to show which semantic representations belong to which sentences, and therefore ultimately how language works as a conceptual communication system – as a means for transmitting configurations of ideas by means of noises or marks on paper.

Linguistic Levels

Linguists, of whatever theoretical persuasion, have always regarded the complexity of language to be such that it is necessary to set up more than one level of analysis. On the other hand, exactly which levels to recognize, and how they are to be interrelated, has been a matter of continuing debate (see pp. 343–57). Here I shall adhere to the fairly traditional breakdown of language diagrammed in Chapter 2 (p. 11), where three main levels, semantics, syntax and phonology are recognized. What I term 'syntax', by the way, corresponds to the traditional understanding of that term, except that it includes the grammatical ('inflexional') markings of words for such categories as 'singular' and 'plural', 'present' and 'past', etc. This level is often referred to in contemporary linguistic writing (for historical reasons discussed on pp. 343–7) as the 'surface structure' level.

But even the tripartite division of language into semantics, syntax and phonology is a simplification in many ways. One of the factors ignored is another traditional division, cutting across the one already made,

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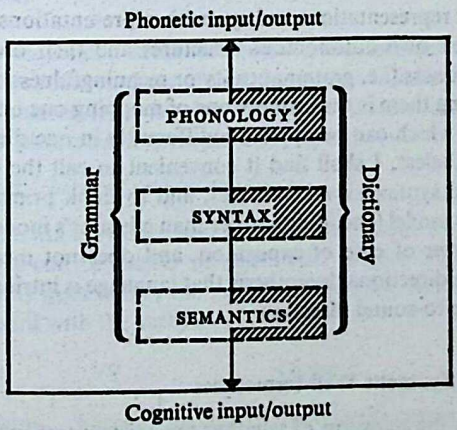
between the GRAMMAR and the DICTIONARY (or lexicon). The dictionary of a language has been often characterized as a list of all the *particular facts* about the language, i.e. those which cannot be generalized into rules. Thus it is a particular fact about English that the sequence of sounds /m/, /æ/, and /n/ conveys the meaning +HUMAN +ADULT +MALE. Particular facts also include irregularities, or cases which are exceptions to a given rule: for example, that *man* has a plural form *men* instead of *mans* is a fact for the dictionary. It happens that such particular facts can be stated with reference to certain elements (lexical items) generally commensurate with the grammatical units we know of as 'words'; but in some cases, the lexical item spans a piece of syntax larger than a word (as in *strike a bargain*, *under the weather*, *down and out*), in which case, we call it an 'idiom'; but in any case, a lexical item has to have its pronunciation and meaning (definition) specially stated, and therefore the dictionary impinges on all three levels of semantics, syntax and phonology. The term 'grammar' has been frequently used in recent linguistics with an enlarged meaning, referring to the total system of a language, and its description. But I shall prefer to use it here in opposition to 'dictionary' (and in line with one of its traditional meanings) as that part of the system of a language which can be described in terms of generalizations, or rules. (This is a view of grammar and dictionary that must, however, be slightly revised in Chapter 11.)

The earlier diagram of language levels can now be presented in a rather less simplified way as follows:



Obviously it is an advantage for the total simplicity of linguistic descrip-

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tion to put as much as one can into grammar; for example, the dictionary definitions of terms like *man* and *woman* should be minimal definitions (+HUMAN +ADULT +MALE, +HUMAN +ADULT −MALE) since other features present in their meaning by implication (+ANIMATE, +ANIMAL, +CONCRETE, etc.) are predictable by rule, namely by the redundancy rules set out on p. 112. Nevertheless, it seems an inevitable part of the nature of language that idiosyncratic facts about particular lexical items should constitute a large part of linguistic description.

In thinking of the relation between 'sound' and 'sense' in language it is natural for us to imagine a directional model, which may be either a speaker's model (converting semantic representation into phonetic output) or a hearer's model (converting phonetic input into semantic representation). But clearly the same relations hold between levels, in whatever direction the process of communication is being operated. Therefore we should aim to state rules which are valid both for the speaker and the hearer, so that we do not have to state the same thing twice over, once for the movement from sense to sound, and once for the movement from sound to sense. This does not prevent some linguists from arguing that it is inevitable, for the proper statement of the rules, that a directional bias should be introduced. 'Generative semantics' (on one interpretation of that term) means that the semantic representation is a 'base' from which syntactic (surface structure) representations are derived. 'Interpretive semantics', on the other hand, represents the view that semantic 'readings' are derived by interpretive rules from a syntactic 'base'. (See further, however, p. 347.) The view I present here is a neutral one: semantic representations and syntactic representations are regarded as having their own autonomous structures and their own conditions of well-formedness (i.e. grammaticality or meaningfulness); the function of rules relating them is then simply one of mapping one on to the other, an operation which can be applied indifferently in one direction or the other. Nevertheless, I shall find it convenient to call the rules relating semantics and syntax *expression rules*, and to think primarily in terms of a speaker's model (encoding) rather than a hearer's model (decoding). This is a matter of ease of exposition, and does not mean that I am adopting a unidirectional hypothesis that language is intrinsically organized in a sense-to-sound direction.

Semantic and Syntactic Well-formedness

Leaving open the question of whether the existence of any levels intermediate between semantics and syntax need be entertained, we may consider in the next few paragraphs some evidence in favour of the view

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that semantics and syntax have their own separate conditions of well-formedness. In the course of this, some of the types of expression rule relating semantics to syntax will be discussed and exemplified.

I have no room here to go into detail on the nature of English syntax, but will simply make use of syntactic elements and categories which will be more or less familiar to anyone who has 'done grammar' at school. Thus the main constituents of a simple English sentence to be considered are:

Noun phrases (NP); e.g. (1) *my best friends*, (2) *the beautiful girl in the corner*, (3) *some bitter disappointments*, (4) *he*, (5) *them*, (6) *Fred*, (7) *Fred's parents*.
Noun phrases consist of a head word (e.g. *friends* in (1)) preceded optionally by one or more pre-qualifiers (e.g. *my* and *best* in (1), *the* and *beautiful* in (2)) and followed optionally by one or more post-qualifiers e.g. *in the corner* in (2)).

Verb phrases (VP); e.g. (8) *has caused*, (9) *have been visiting*, (10) *is making*, (11) *know*, (12) *is*, (13) *are*, (14) *working*, (15) *to try*. Verb phrases are either finite (i.e. contain a finite verb form such as *has* in (8) or *have* in (9)), or are non-finite, such as (14) and (15), which consist simply of non-finite forms (participles or infinitives).

Adjectives or *adjective phrases*; e.g. *unhappy*, *very ill*, *ready for a fight*, etc.

Adverbs or *adverbial phrases*; e.g. *here*, *quickly*, *in the morning*, *because of you*, etc.

In addition, embedded sentences (or subordinate clauses) can have syntactic roles similar to those of the constituents listed above. Adverbial and nominal clauses, for example, are embedded sentences which behave like adverbial phrases and noun phrases respectively:

what he said; *because you are my friend.*

These constituents may have various functions within a sentence. Thus a noun phrase can be *subject* or *object* (the subject being the element which normally goes before the verb in declarative sentences, and has number concord with the verb):

Subject	VP	Object
Fred's parents	know	the beautiful girl in the corner

A noun phrase can also be a *complement* of an equative verb like *be*, or the object following a preposition:

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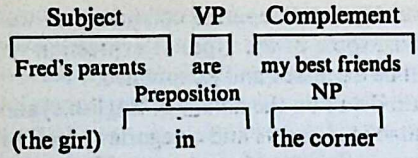
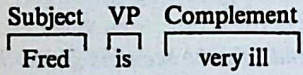


The complement position can also be filled by an adjective or adjective phrase:



Both the ordering and the combination of the elements Subject (S), Verb phrase (V), Object (O), and Complement (C), are strictly limited in English. Thus the sequences SVO, SVC, SVOC and SVOO are acceptable:

(1) My best friends | have been visiting | Fred's parents. (SVO)
(2) Fred's parents | are | ready for a fight. (SVC)
(3) Fred | is making | them | unhappy. (SVOC)
(4) The beautiful girl in the corner | has caused | Fred | some bitter disappointments. (SVOO)

But other sequences are 'ungrammatical':

(5) * Fred's parents | ready for a fight | are. (SCV)
(6) * Some bitter disappointments | has caused | the beautiful girl in the corner | Fred. (OVSO)

In addition, each sentence pattern is associated with a particular class of verb; thus

(7) * Fred is making very ill

is ungrammatical because *make* is not a member of the class of verbs (equative verbs) which are capable of entering into the SVC pattern.

Moreover, there are more general structural constraints, such as that a sentence or finite verb clause (i.e. a clause containing a finite verb like *is making* rather than a non-finite verb like *working* or *to try*) must contain a subject:

(8) My best friends have been visiting Fred. (grammatical)
(9) * Have been visiting Fred. (ungrammatical)

Further, that generally speaking every sentence must contain a verb phrase of some kind or other:

(10) * Fred very ill.

Examples (9) and (10) are clearly structurally defective, and cannot

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be considered well-formed English sentences. Such rules of syntactic structure have little to do with meaning. Thus sentences analogous to (5) and (10) would be perfectly normal in some languages other than English (e.g. Latin for (5), Russian for (10)); and sentence (10) in a way is a more direct reflection of the semantic structure of the sentence, which consists of Argument + Predicate, than is the corresponding SVC sentence *Fred is very ill.* It just happens that English sentences require a verb phrase, and where no content capable of being expressed by a verb is present, the 'dummy verb' *be* has to be introduced to fill out the structure of the sentence.

It has been hinted in this and in the two preceding chapters that there are some rather direct correspondences between syntactic constituents and semantic elements such as arguments and predicates. The more important of these interconnections are:

SYNTACTIC		SEMANTIC
Noun phrase	↔	Argument
Verb phrase	↔	Predicate
Adjective (phrase)	↔	One-place predicate
Prepositional phrase	↔	Downgraded predication
Relative clause	↔	Downgraded qualifying predication (p. 146)
Adverb, adverbial phrase or clause	↔	Downgraded modifying predication OR predicate + argument (linked to a subordinate predication)
Preposition*	↔	Predicate
Conjunction*	↔	Predicate (both terms of which are predicates)
Nominal clause (i.e. clause with the functions of a noun phrase)	↔	Subordinate predication
'Nominalization' (i.e. noun phrase with an abstract noun head derived from a verb or an adjective)	↔	Subordinate predication

Elements marked * can also realize a series of 'merged' predicates, in the sense of p. 189. The correlation between 'nominalizations' and subordinate predications explains why the latter are often rendered, in syntax, as noun phrases. Compare

She regrets *his failure to find a job.*

with

She regrets *that he failed to find a job.*

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As we see in the table, the mappings are not one-to-one (if they were, there would be no need to recognize the distinctiveness of semantic and syntactic units), but are many-to-one in both directions. Which mappings apply to a given sentence depends on dictionary entries – an aspect of expression rules to be considered in the next chapter. It happens, for instance, that the English lexicon provides both an adjective and a verb to express the same predicate in *Two loaves suffice* and *Two loaves are sufficient*. But in the vast majority of cases, this choice of word class, and hence of clause type, is not available, and only one or the other can be used.

'Zero' Mappings

One of the more persuasive reasons for considering syntactic and semantic structural constraints as independent of one another comes from the existence of elements on one level which have a 'zero' mapping on the other level. We have already noted (p. 183) that the verb *be* can be regarded as a 'dummy element' in syntax, that is, as an element which exists on the syntactic level to fulfil certain conditions of syntactic well-formedness, but which has no semantic content. Another example of a dummy element is the subject *it* in sentences like *It is raining*. 'Rain', it was suggested earlier (p. 131), is a semantic predicate which is without arguments; however, syntax requires that a sentence should have a subject, and so the pronoun *it* is introduced to fill this grammatical function, even though it has no conceptual content to express.

The opposite situation arises with null arguments, and with arguments which contain no features other than the feature of definiteness. Both these types of argument, as I have already pointed out, have zero expression. However, the conditions under which there can be zero expression are also dictated by syntactic considerations. In an active sentence with a transitive verb like *enjoy*, neither of the arguments of a two-place predication can be unexpressed, even though the semantic conditions for zero expression may be present:

(1) The man in the street enjoys television plays.
(2) *The man in the street enjoys.
(3) *Enjoys television plays.
(4) *Enjoys.

Only (1) makes an acceptable English sentence. On the other hand, if the same predication is subordinated, and is 'normalized' as a noun phrase, either or both arguments can be unexpressed:

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(1a) The man in the street's enjoyment of television plays (is on the increase).
(2a) The man in the street's enjoyment (is not to be despised).
(3a) Enjoyment of television plays (is on the increase).
(4a) Enjoyment (is the end of all art).

The reason for this difference is a syntactic reason: namely, that main clauses (which are finite-verb clauses) require a subject and (when the verb is transitive) also an object: while the rule that pre-qualifiers and post-qualifiers in a noun phrase are optional means that in nominalizations, the semantically analogous elements can be omitted. Hence the same rule which accounts for the omissibility of adjectives before a noun, and relative clauses after a noun, also accounts, incidentally, for the possibilities of zero expression in nominalizations.

There are a number of other circumstances in which zero expression is seen to occur only if it can be accommodated in syntactic rules. For example, if we were to turn sentence (1) into the passive it would be possible to omit the agent, the phrase which follows *by* and which corresponds to the subject in the active:

Television plays are enjoyed by the man in the street.
Television plays are enjoyed. (i.e. 'by people in general')

This can again be explained according to a very general rule of syntax – the rule (which has few exceptions) that adverbial elements of a sentence are optional. The agent phrase is a prepositional phrase which is directly part of a sentence, and so is classed syntactically speaking, as an adverbial, on a par with such phrases as *in the home* or *at weekends*. Once again, then, the independence of syntactic from semantic rules is emphasized: the same condition that accounts for the adverbial phrase's optionality in a sentence like *Television plays are enjoyed in the home* also accounts for the possibility of zero expression of the agent.

The following are further syntactic positions where optionality favours zero expression of one or both arguments:

(A) *Non-finite clauses* (where the subject is normally optional)
To rob a child is a heinous crime.
(Compare: *For a man to rob a child* is a heinous crime).
(B) *Agent nouns ending in -er*
Fred's father is *a smoker*.
(Compare: Fred's father is *a cigar-smoker*.)
(C) *Verbs capable of functioning as both transitive and intransitive verbs*
The king *had been hunting*.
(Compare: The king *had been hunting deer*.)

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(D) *Prepositional adverbs corresponding in meaning and form to prepositions* (i.e. omissibility of the object of preposition)

John fell *in*.

(Compare: John fell *in the water*.)

Zero expression in this last case depends on whether there is a prepositional adverb of the same form as the preposition and expressing the same meaning, except for the general indefinite or definite meaning of the associated argument. The double syntactic function of *in* in (D) may be contrasted with other prepositions for which there is no corresponding prepositional adverb in English: for instance, there is no **I will come with* in English to correspond with German *Ich will mit*.

The lesson to be learned from these examples is that in determining the acceptability of an utterance we have to assess independently the well-formedness of the semantic and syntactic representations as linked by expression rules. To return to an earlier example: **John is making very ill* can be perfectly meaningful if we take it that the argument corresponding to the omitted object has zero expression (e.g. the meaning could be approximately 'John is making people-in-general very ill.') But meaningfulness does not guarantee syntactic well-formedness, and so the utterance of a perfectly sensible thought is 'blocked' by a rule of English syntax – namely, that the object is not omissible in an SVOC clause pattern.

Semantic Contrasts Compared with Syntactic Contrasts

The same point is reinforced when we turn from the consideration of syntactic and semantic constituent structure to a comparison of the two levels in respect of contrastive features. Syntax, like semantics, is organized in terms of contrastive oppositions (e.g. common noun versus proper noun; finite clause versus non-finite clause; past tense versus present tense). But firstly, syntax is much less rich in dimensions of contrast than semantics (because much of the contrastive structure of semantics is 'absorbed' by lexicalization – p. 188), and secondly, syntactic choices are obligatory where semantic choices are often optional.

This second difference can be illustrated from the oppositions of countability and plurality, which operate in relatively close correspondence on both levels of analysis, but are discrepant in one important respect. Both the similarity and the difference are highlighted in these diagrams, showing dependence relations:

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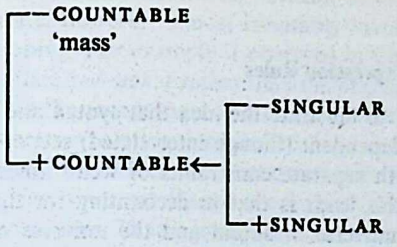
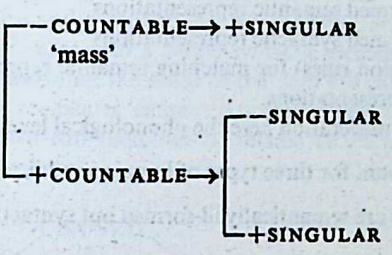
Semantics



Syntax



The arrow pointing to the right in the syntactic diagram can be read 'has to be ...', and symbolizes the essential difference between syntactic and semantic networks of contrastive features. In syntax the fact is that all noun phrases and finite verb phrases have to be classified as either singular or plural, even in cases (e.g. the case of mass nouns) where, in semantic terms, the choice is inappropriate. No contrast between 'one' and 'more than one' can be involved, for example, in the conceptualization of a substance like smoke; and yet syntax forces us to treat the mass noun *smoke* as singular rather than plural:

Smoke was billowing from the chimney
(not **Smokes were billowing from the chimney.*)

Thus although the categories of syntax are much fewer than those of semantics, they are given importance (sometimes inappropriate importance from the semantic point of view) through their obligatory status. These syntactic categories generally correspond with semantic features which are of particularly wide use either because they are operators (e.g. definiteness, negativity) or because they have a focal position in the taxonomic 'tree' of contrasts (p. 112; e.g. countable/mass, singular/plural). The member of a syntactic opposition automatically selected when choice from the semantic opposition is inappropriate or neutralized

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is called the *unmarked* term, while the opposite term is called *marked* (see pp. 113–17).

Processes Involved in Expression Rules

Enough has been said to illustrate the idea that syntax and semantics are two levels with independent (though interrelated) sets of structures and contrasts, and with separate constraints of well-formedness. The conclusion to which this leads is that in accounting for the complex relation between the universe of sound and the universe of sense, a linguistic theory must specify for every language at least:

(a) the set of well-formed semantic representations
(b) the set of well-formed syntactic representations
(c) the rules (expression rules) for matching semantic representations with syntactic representations.

(We exclude from consideration here the phonological level.)

By this scheme we account for three types of linguistic oddity:

(1) Utterances which are semantically ill-formed but syntactically well-formed:
(e.g. **John is bigger than himself.*)
(2) Utterances which are syntactically ill-formed but semantically well-formed:
(e.g. **John are more big than his brother.*)
(3) Utterances which are both semantically and syntactically ill-formed:
(e.g. **John are more big than himself.*)

I shall now try to indicate in general terms what the functions of expression rules are. Up to now, the lack of 'fit' between syntax and semantics has seemed somewhat wayward and unprincipled. But certain general processes can be observed to operate, and these are relatable to observations about the differences between syntactic and semantic structures, and the apparent reasons for these differences. The four processes I shall identify (looking at language in terms of a speaker's model) are *lexicalization*, *structural compression*, *linearization*, and *thematization*.

'*Lexicalization*' is the process of 'finding words' for particular sets of semantic features, and has the psychological role (as I suggested on pp. 30–32) of 'packaging' a certain semantic content, so that it can be manipulated syntactically as an undivided unity. There is often a choice of lexicalizing a given content in more than one way (e.g. by selecting from a set of synonyms), or a choice of lexicalizing to different degrees

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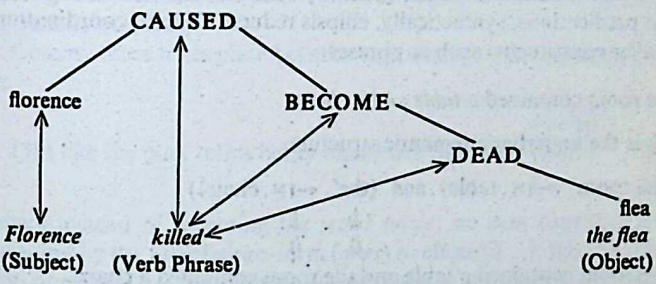
(for example, selecting the term *philatelist* in preference to the phrase *person who collects stamps*). The decision to use a single word rather than a phrase, however, almost inevitably involves some shift in conceptual meaning. For example, I observed in Chapter 3 that to use the single word like *bed-maker* rather than the phrase like *person who makes beds* involves the recognition of a category (here a category of person whose business or role it is to make beds).

The sense of a word (i.e. its dictionary definition) can in general be represented as a single set of semantic features, which may include downgraded predications. That is to say, on the whole, the content of a single word does not extend beyond the boundaries of a single argument or predicate. The main exceptions to this are the 'relating words', verbs, prepositions, and conjunctions, whose definitions may involve a 'merging' of predicates into a single syntactic element. For example, it has been suggested that the sense of the verb *kill* can be described in terms of the three predicates 'cause ... become ... dead'. The sentence *Florence killed the flea* can therefore be related to its semantic representation roughly as follows:



In any case, the restriction of most lexical items to a single feature or set of features does not prevent them from considerable structural complexity, since those features which are downgraded predications can themselves contain further subordinate and downgraded predications. The meaning of *martyr*, for instance, if we define it as 'a human being who dies because of his/her adherence to his/her religious faith', must contain two features, +HUMAN and ⟨*X*⟩, where ⟨*X*⟩ is a downgraded predication with a structure at least as complex as this:

⟨((the′ : DEAD) : BECOME ⟨the″ . REASON . (the′ . UPHOLD . faith)⟩″⟩ 'who dies/d because of upholding faith'

Even more complex definitions are those of *hostage* and *ultimatum*.

From these examples and the preceding diagram, it is easy to see that

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one of the effects of lexicalization is that of *structural compression*; that is, of reducing the complexity of structure, in terms of number of elements and depth of subordination. Put crudely: the same content is crammed into smaller tree-diagrams. This compression, which renders the message more manageable for linear presentation in the eventual form of a phonetic output, is brought about not only by lexicalization, but by zero expression and other devices of abbreviation.

Reduction in syntactic complexity can be achieved either (i) by zero expression (deletion, ellipsis), or (ii) by the use of pro-forms such as pronouns. We have already noted three types of semantic element which receive zero expression: (a) null arguments; (b) the definite operator (when not accompanied by other features in the same argument/predication); and (c) elements which repeat the content of other elements – this last phenomenon was called *cosemy* ('correspondence of meaning') on p. 173. As speakers, we can make great economies of expression particularly in cases (b) and (c), where linguistic context enables the hearer to recover what has been omitted.

Consider constructions of coordination. Although semantically (see p. 169) such constructions are generally to be interpreted as a joining of two predications, syntactically, ellipsis reduces them to coordinations of smaller constituents such as phrases:

The room contained *a table and a chair*.

This has the underlying semantic structure:

((the room'. ←IN. table). and. (the'. ←IN. chair))
↓ ↓
0 0

'The room contained a table and the room contained a chair'

but, as indicated, the argument and predicate of the second predication may, through coreference and cosemy respectively, be given zero expression.

As further illustrations of syntactic reduction, here are two imaginary conversations, the former showing the use of pro-forms, and the latter the use of ellipsis:

(1) They say that the match will be cancelled.
Who said *that*? (i.e. '... that the match will be cancelled')
Tom *did*. (i.e. '... said that the match will be cancelled')
I don't believe *it*. (i.e. '... that the match', etc.)
Well, *so* he said. (i.e. '... that the match', etc.)
And *so* did Harry. (i.e. '... say that the match', etc.)

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(2) They say that the match will be cancelled.
It can't be! (i.e. '... cancelled')
How do you know? (i.e. '... that the match will be cancelled')
Tom told me. (i.e. '... that the match', etc.)
And Harry. (i.e. '... told me that the match', etc.)

In (1), the pronouns and other pro-forms, which are in italics, obviously save the repetition of the clause 'that the match will be cancelled' a number of times. A comparable result is produced by the ellipses in (2).

These are cases of cosemy rather than of coreference: in each case, part of the semantic content of one utterance is repeated in another, and this repetition can, if required, be made explicit by an exact repetition of words. Coreference, on the other hand, does not necessarily coincide with word-by-word repetition:

(3) *Ten people* were injured and (*they*) were taken to hospital.
(4) *Ten people* were injured and *ten* (*people*) were taken to hospital.

The meaning of (3), in which there is coreference between the subjects of the two clauses, clearly differs from that of (4), in which there is partial cosemy between the subjects. (Brackets indicate words which may be optionally omitted.)

Cosemy often takes place between arguments or parts of arguments, as in:

(5) I like the pink tulips better than I like the white { *tulips.* / *ones.* / ... }

where instead of repeating the word *tulips*, we may express the same meaning by the use of a pro-form (*ones*) or ellipsis (...). But the substitution or ellipsis can also apply to larger parts of utterances. For example, (5) could be simplified still further as follows:

(5a) I like the pink tulips better than *I do* the white.

or even further as follows:

(5b) I like the pink tulips better than the white.

One of the most remarkable examples of the economy achieved through ellipsis is that which occurs in the traditional marriage service:

Curate: Wilt thou have this Woman to thy wedded wife, to live together after God's ordinance in the holy estate of Matrimony? Wilt thou love her, comfort her, honour, and keep her in sickness and in health: and, forsaking all other, keep thee only unto her, so long as ye both shall live?
Man: I will.

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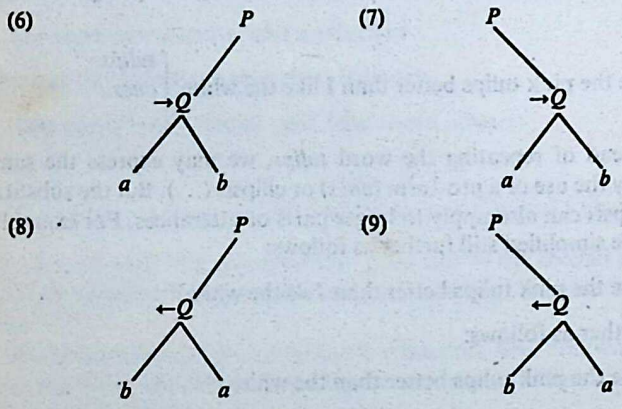
By saying *I will*, the bridegroom is understood to commit himself to everything which has been said in the priest's question; following this phrase, in fact, there is an ellipsis of as many as fifty words.

A third process performed by expression rules is (to use Wallace Chafe's term) that of *linearization*. This is the rendering of semantic representations (which we have assumed are indeterminate with regard to ordering in left-to-right or earlier-to-later sequence) into a fully sequential form appropriate to the unavoidably time-bound phonetic transmission of the message. The image of semantic structure used by Chafe is of a 'mobile' (*Meaning and the Structure of Language*, p. 5) of freely pivoting branches, as distinct from the two-dimensional tree diagrams which are appropriate for syntactic structure, and which (for lack of three-dimensional paper) I have also had to use as a mode of display for semantic structures in this book. I have suggested that the only indicator of ordering, in semantic structure, is the arrow of directionality belonging to relational predicates, by means of which the meanings of (say) '*a* is above *b*' and '*a* is below *b*' are distinguished. The consequence of this is that for any semantic representation, there can be a number of different two-dimensional diagrams, arrived at by treating each predicate as a pivot around which its terms may be rotated:



These four diagrams are all visual variants of the same semantic representation. What happens in the course of linearization is that the definitions of verbs and other predicate-expressing words specify which syntactic elements (subject, object, etc.) these configurations are to be matched with. Thus one definition of the verb *remind* ('cause to remember') can be specified roughly as follows:

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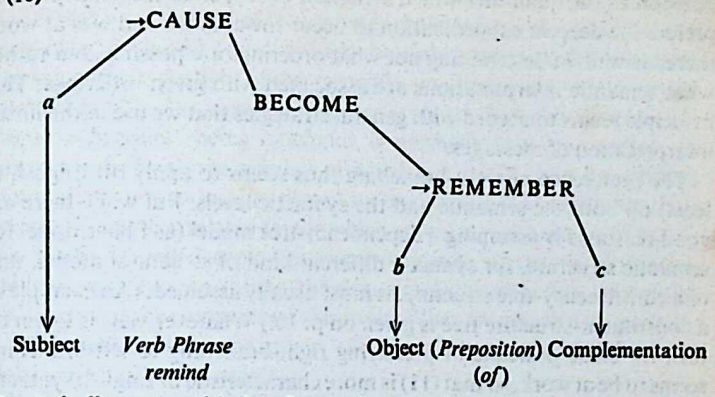
(10)



Remind allows two kinds of complementation: either a noun phrase preceded by *of*, or a *that*-clause not preceded by *of*:

Peter reminded me of my promise.
Peter reminded me that I owed him a pound.

The omission of the preposition in the second construction is in accordance with a very general rule of expression which omits prepositions where their inclusion would result in an ill-formed sentence (notably, before a *that*-clause: * *Peter reminded me of that I owed him a pound*).

Syntactic elements such as Subject and Object have neutral or unmarked positions in the clause; normally, for example, a Subject precedes a verb, and an Object follows it. A definition such as (10), then, in effect determines the ordering of the elements of meaning in the sentence. It seems that this ordering is not determined arbitrarily, but that certain general principles are at work in the choice of linearization. One of them is that, in a relative opposition, it is the 'dominant' term which is normally expressed first (see p. 114); this means in practice that left-pointing arrows (such as →CAUSE, →REMEMBER in (10)) predominate over right-pointing arrows in any semantic representation which imitates syntactic ordering. A second factor is that, for English and many other languages, there is a preference for right-branching rather than left-branching in semantic and syntactic tree-structures; in other words, the greatest depth of subordination is reached towards the end, rather than towards the beginning, of a sentence. This again is illustrated in (10), and we may also in this connection refer back to the ambiguity of mixed quantifiers on pp. 174–5. There it was noticed that in sentences like *Every boy knows some jokes* or *Some jokes are known by every boy*, the preferred interpretation is that which takes the quantifier which is syntactically in the furthest left

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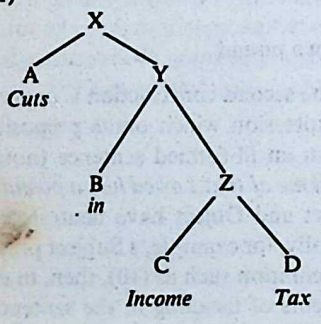
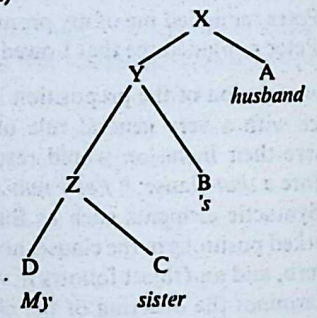
position as the quantifier which is highest in scope. So the principle that prefers the deepest subordination to occur towards the end was at work there, as well: in determining not what orderings are possible, but rather what semantic interpretations are associated with given orderings. This principle seems to accord with general strategies that we use in the linear interpretation of messages.

The preference of right-branching thus seems to apply (in English at least) on both the semantic and the syntactic levels. But while there are good reasons for assuming a dependency-tree model (as I have done) for semantic structure, for syntax a different kind of structural model, that of a constituency-tree structure, is most usually assumed. (An example of a constituent-structure tree is given on p. 10.) Whatever view is taken on this, the same principle of preferring right-branching to left-branching seems to be at work, so that (11) is more characteristic of English syntactic structure than (12):

(11)

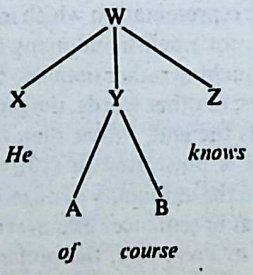


(12)



Even less characteristic of syntax than left-hand branching is the parenthetical inclusion of one structure in another, as in (13):

(13)



And now, to the principle of avoiding structures like (12) and (13) in

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favour of structures like (11), can be added yet another syntactic principle, which is that if an element of the sentence receives focal emphasis as 'new information', it should occur towards the end rather than the beginning of the sentence. In the light of this principle, we can explain why it is more natural to say *The box contained a bracelet* rather than *A bracelet was in the box*: 'a bracelet', being indefinite, is normally new information, in contrast to 'the box', the referent of which is already given by context; therefore it is more natural to place 'the box' earlier in the sentence than 'a bracelet'. Another related factor which enters into the choice of word-order is the so-called topic–comment articulation: the division of a sentence or a clause into a topic (the element which comes first – normally the subject) and the comment on this topic. When we negate a clause with *not*, it is usually only the comment, the part of the clause following *not*, which is affected by the negation:

	TOPIC	COMMENT
(14)	The children	ate some apples
(15)	The children	didn't eat any apples
(16)	*Any apples	weren't eaten by the children.

Accordingly (15), as the negative equivalent of (14), negates the *comment* of (14) only. It is also because of the topic–comment articulation that (16) is not a well-formed passive of (15). The form *any* in *any apples* indicates that this phrase is within the scope of negation: something which is not compatible with its position as the subject and topic, preceding the negative particle *not*.

The topic–comment distinction in fact limits the scope of negation as described on pp. 167–8, so that scope is restricted on the one hand by semantic dependency, and on the other by syntactic precedence. More of this in Chapter 14, pp. 290–92.

The principles of syntactic ordering just discussed bring into play not just linearization, but also a further process, which I shall call *thematization*. This is the process of organizing the elements of the message so that weight and emphasis fall in appropriate place. To some extent, the thematizing function is performed by the normal process of matching semantic with syntactic elements. If, as has been suggested, adverbial elements of syntax (e.g. prepositional phrases of time) are matched with modifying downgraded predications, then the natural result of this matching rule is to turn a syntactically awkward division of the sentence like that of (17) into an ordering like (18):

(17) *a*. *P* .*b*
they . SAW ⟨ON THURSDAY⟩ . her

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(18)

Subject	VP	Object	Adverbial
They	saw	her	on Thursday

This is because there is a fairly general rule of English syntax that adverbials (especially those consisting of more than one word) most commonly occur in final position, following the verb and (if any) its complements or objects.

But there is more to thematization than this. As we saw in Chapter 2 when considering thematic meaning, a language such as English contains numerous rules or syntactic devices for varying the order of elements in a sentence. The most well-known of these is the rule converting active into passive sentences:

(19) *Peter reminded me of my promise* →
I was reminded of my promise (*by Peter*).

Other instances are the rule which relates a sentence-type with an indefinite subject to a sentence-type with the introductory particle *there*:

(20) *A bracelet was in the box* → *There was a bracelet in the box.*

and the rule which postpones a clausal subject to the end of the sentence, substituting for it the dummy subject *it* in initial position:

(21) *That he has left surprises me* → *It surprises me that he has left.*

These TRANSFORMATIONAL rules can be regarded as rules operating on syntactic structures with their associated semantic content, very roughly as follows:

(22) *Passive Rule*
$\ldots S_a$ VP [active] $(\ldots) O_b \ldots \rightarrow$
$\ldots S_b$ VP [passive] $(\ldots)$ (Adverbial Phrase)
by Noun Phrase$_a$

(where *a* and *b* indicate the corresponding arguments in the semantic representation).

Such rules are essentially syntactic rather than semantic, however: they equate sentences having the same semantic representation, and can be compared with similar equative rules on the semantic level (see, for example, p. 170, pp. 256–69).

In other theories (see pp. 343–8), transformational rules have a different and wider role than has been assumed here; here I have regarded them purely as devices of linear organization on the syntactic level, and

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as distinct from the rules of expression which map the semantic level on to the syntactic one. As such, it is their function to provide various ways of *thematizing* the same conceptual message; to put the matter another way (following the distinction between various kinds of meaning in Chapter 2), their function is to assign different *thematic meanings* to sentences which convey the same *conceptual meaning*.

Matching Form to Meaning

We have thought about the general character of the relation between syntax and semantics, but to formalize this relation properly (and hence to fulfil one of the goals of semantics as outlined on p. 86), it is necessary to provide a fully explicit procedure (an *algorithm*) for matching a particular sentence with a particular semantic representation. For example, let us assume that (23) is a correct representation of the meaning of (24) (for brevity, in this representation the symbol ⟨*t*⟩ is used for the meaning of the past tense – see p. 164):

(23) ((the HUMAN – ADULT SINGULAR : – SLEEP) : BECOME ⟨*t*⟩)
(24) *The child awoke*

Then our knowledge of English enables us to identify, out of the indefinitely many possible meanings that sentences may have, (23) as a correct meaning of the sentence (24); or conversely, to identify (24), out of indefinitely many possible sentences, as a correct way of expressing the meaning (23). How do we manage to make this match?

I suggest that this mapping of sentence on to sense or of sense on to sentence is achieved largely by means of our mental dictionary. Think of that dictionary not just as a list of entries for all the words in the language, but as including entries for syntactic features such as [Past], [Present], [Singular], [Plural], etc. More important, think of it as incorporating information on the combinability of words. Augmented in this way, a dictionary does not present just isolated quantities of meaning – it defines words in terms of their combinability with other elements both syntactically and semantically. So we may think of it as containing not only the matchings of words with their senses, but as containing all the basic information that we need (given that we also have independent grammars of syntactic and semantic structure) in order to work out the matching of whole sentences with *their* senses. In this way, we return to the idea, rejected earlier (see p. 123), that the meaning of a sentence is derived from the meanings of the words of which it is composed. As long as independently we know enough about the syntactic and semantic properties of words, this apparently simplistic idea is not far from the truth.

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A key to this approach is the concept of VALENCY, which may be defined as the potential that a word possesses for combining with other words both syntactically and semantically. (The term *valency* is borrowed from chemistry, where once again – see pp. 121–2 – an interesting parallel with language structure is suggested.)

Let us take as illustrations the two words *say* and *speak*. We assume that the dictionary entries for these words will consist (like those of other words) of three parts, and will look something like this:

		say		
Morphological specification:	(*p*)			
Syntactic specification:	(*q*)	Subject	$+[V]_{VP}+$	Object
Semantic specification:	(*r*)	*a*	SAY	*b*

		speak	
Morphological specification:	(*p*)		
Syntactic specification:	(*q*)	Subject	$+[V]_{VP}$
Semantic specification:	(*r*)	*a*	SAY $\emptyset$

Ignoring the morphological specification, which may be treated at present simply as a pronounceable 'label' for the word, we concentrate on the relation between the syntactic specification and the corresponding semantic specification, or *definition*, of the word. Although *say* and *speak* express the same basic meaning (that of the relative feature 'SAY') they differ in terms of valency. This is shown by the valency 'slots' marked above by boxes formed from broken lines: [ ]. *Say* has a double valency – it requires both a subject and an object; whereas *speak* has only a single valency – it has no object. This may seem just a longwinded way of saying that *say* is transitive while *speak* is intransitive; but the point is that valency has both a syntactic and a corresponding semantic aspect. The definitions of *say* and *speak* differ in that *speak* incorporates a null argument; that is, the meaning of *speak* is roughly to 'say *something*'. Thus the valencies of *say* and *speak* are different: *say* requires two elements (Subject and Object) to complete its meaning, whereas *speak* requires only one element (Subject alone). The lexical entry for each matches up these elements with unspecified elements of the semantic definition: the subject 'slot' has to be filled by an initial term, and the object 'slot' (in the case of *say*) by the final term of the predicate 'SAY'. This is how the semantic and syntactic specifications are interlinked.

What I have called the 'valency' of a verb is the number and type of syntactic slots or roles which have to be filled in order to complete the meaning of that verb. Although the example of *say* and *speak* is over-simplified, it does show that syntactic valency is independent of what we

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might now fittingly call 'semantic valency': the combinatorial possibilities of predicates and their terms. Both verbs *say* and *speak* express the same two-place predicate 'SAY', and yet their syntactic valencies are different. The same point is made more clearly still by the earlier example (on p. 193) of the verb *remind*, the meaning of which is composed of a set of predicates; but the arguments of these predicates add up to a single valency – a valency of three elements – for the verb itself. We have thus encountered the following numerical possibilities:

VALENCY of 1	VALENCY of 2	VALENCY of 3
a speak	*a say b*	*a remind b of c*

But valency is not just a numerical matter. The way in which semantic combinations may be mapped on to syntactic ones allows for many possibilities. We should remember, of course, that verbs, like other kinds of words, can be ambiguous, and this means that the same verb may have a number of different valencies. In one sense, for example, both *say* and *speak* are bivalent, and are synonymous: *The actor spoke his lines* and *The actor said his lines* have the same sense. Further, we should include the possibility that valencies contain elements which are optionally realized, such as the optional direct object in *Jill was writing/Jill was writing a letter.* Finally, we should note that not only verbs, but members of other word-classes have valencies. An adjective like *happy* is univalent (*a be happy*) but an adjective like *glad*, although similar in meaning to *happy*, requires two elements to complete its meaning: *a is glad at/about b.* (This might be explained in everyday language by saying that *happy* signifies a simple, 'unfocused' emotion, whereas *glad* represents an emotion which is 'focused' on some source or object of feeling.) Nouns are a mixed category as regards valency: some nouns, e.g. those signifying natural kinds or artefacts, are univalent, in contrast to relational nouns such as *father*, *end*, *employee*, etc., which are bivalent.

Once it is accepted that dictionary entries give information about valency, then the procedure of encoding sense into syntax or of decoding syntax into sense can be largely seen as a matter of simple aggregation or subtraction. We might call it a 'bucket procedure', and to illustrate it, I shall take an extremely simple sentence, *The child awoke*, the meaning of which has already been represented in (23), p. 197. For this sentence, only five lexical entries in the dictionary need be used: those for the three words *the*, *child*, and *awake*, and those for the two syntactic categories [Sing] ('singular number') and [Past] ('past tense'):

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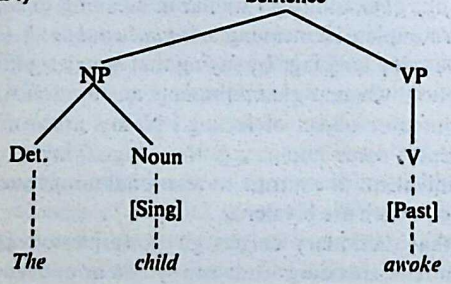
Lexical Entry 1 *p*: *awake/-woke(n)* *q*: S $[V]_{VP}$ *r*: ((*a* : −SLEEP): BECOME)	*Lexical Entry 2* *p*: *child* *q*: Noun *r*: *a* HUMAN −ADULT
Lexical Entry 3 *p*: *the* *q*: Det. Noun *r*: the *a*	*Lexical Entry 4* *p*: V + Past *q*: V [Past] *r*: *P* ⟨*t*⟩
Lexical Entry 5 *p*: ∅ *q*: Noun [Sing] *r*: *a* +SINGULAR	*Key*: For *p*, *q*, and *r*, see p. 198: underlining marks the definition itself, as distinct from the conditions on which the definition occurs. *P* and *a* are predicate and argument variables (see p. 132).

The metaphor of the 'bucket' is meant to suggest that the syntax–sense mapping is rather like emptying the contents of one bucket by filling up another bucket of a different shape. Suppose we want to verify that the proposition (23) is expressed by the sentence (24):

(23) ((the HUMAN − ADULT SINGULAR: −SLEEP): BECOME ⟨*t*⟩)

(24)



Starting at the highest point of the semantic dependency tree, we can proceed by using Lexical Entries 1–5 above in sequence, each time subtracting the semantic specification (*r*) from the semantic representation, and adding the syntactic specification (*q*) to the syntactic representation. In this way we gradually empty one 'bucket', and fill the other (when meaning is subtracted from the left, it is replaced by unspecified residual variables *a*, *b*, *P*, *Q*, etc.):

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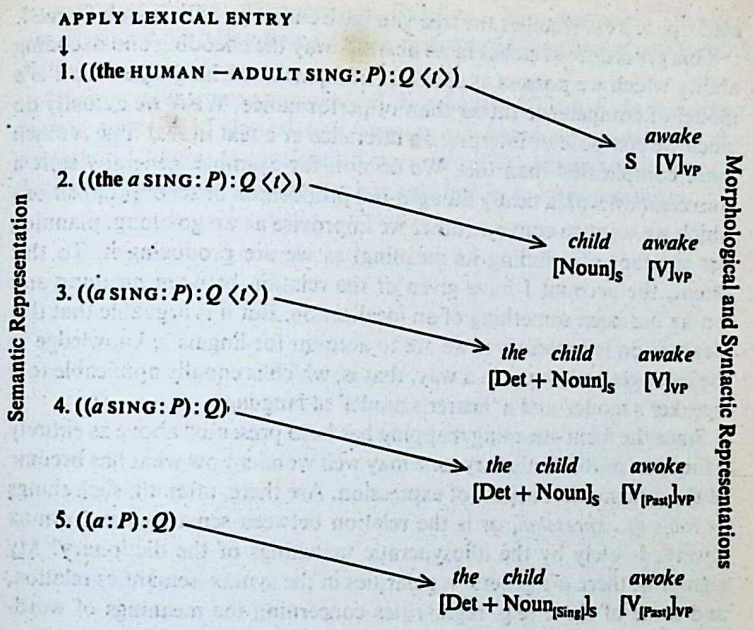

After the five lexical entries have been applied, the semantic representation consists only of variables: this shows that the semantic bucket has been 'emptied' – that all its content has been encoded. But the encoding will only be satisfactory if the syntactic bucket is 'full' – i.e. if the syntactic representation fits into the specification for a well-formed, complete sentence. Sometimes syntactic well-formedness depends on rules which are independent of meaning – such as the rule of number agreement between subject and verb. Similar considerations apply when the procedure is performed in the reverse direction, that of decoding. The lexical entries take for granted the rules of well-formedness which apply to syntax and to semantics.

In outline, the procedure I have illustrated for mapping meaning on to form or vice versa goes as follows: 1. Start at the top of the tree: at the main clause or principal predication. 2. Find a lexical entry which is contained by part of the tree you are working with. 3. Apply the lexical entry by (a) subtracting its semantic/syntactic specification from the tree with which you started; and (b) adding its semantic/syntactic specification to the tree you are constructing. 4. Repeat steps 2 and 3, progressing down the tree until the whole of the tree with which you started has been

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used up. 5. Test whether the tree you have ended up with is well-formed.

This procedure sketches in an abstract way the encoding and decoding ability which we possess as speakers of a particular language. But it is a model of competence rather than of performance. What we actually do when we compose or interpret an utterance or a text in real time is much more complicated than this. We do not, for example, generally start a conversation with a neatly thought-out proposition or set of propositions which we want to convey: rather we improvise as we go along, planning our utterance (including its meaning) as we are producing it. To this extent, the account I have given of the relation between meaning and syntax has been something of an idealization. But it is arguable that this idealization is necessary if we are to account for linguistic knowledge in the most general way – in a way, that is, which is equally applicable to a 'speaker's model' and a 'hearer's model' of language.

Since the form–meaning mapping has been presented above as entirely a function of the dictionary, one may well wonder now what has become of the grammatical aspect of expression. Are there, after all, such things as *rules of expression*, or is the relation between semantics and syntax governed solely by the idiosyncratic matchings of the dictionary? My answer is: there *are* general regularities in the syntax–semantics relation, and some of these (e.g. regularities concerning the meanings of word-classes) have been stated on p. 183. But such rules are not in competition with dictionary entries; on the contrary, they are rules governing the possible form that dictionary entries can take. It may well be that all expression rules can be considered dictionary-constraining rules in this way; even, for example, the rules for zero mappings. Grammar and the dictionary, so viewed, are not mutually exclusive aspects of language, the 'regular' and the 'irregular'; but one should rather regard grammar in this context as the system of structural regularities which a given language (or languages in general) imposes upon the form of dictionary entries.

Conclusion

We must view semantics as only a part of a total theory of language. Therefore evaluating a semantic model means asking: how well does that model integrate with syntax? It is important that we should try to make the rules mapping syntax and semantics as simple as possible.

I have presented arguments for treating semantics and syntax as distinct levels of representation, with distinct conditions of well-formedness or 'grammaticality'. I have also indicated a number of interrelated processes involved in the semantico–syntactic mapping. Ultimately, these can be reduced to two factors of (a) linearizing the message and (b)

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achieving economy of expression. Finally, I have proposed that the encoding and decoding processes are performed by means of our mental dictionary, or lexicon.

All these points are controversial. In Chapter 17 I shall discuss some variant theories of the relation between semantics and syntax. In the meantime, Chapter 11 considers in more detail the structure of the 'mental dictionary' to which this chapter has attached so much importance.

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11. Semantics and the Dictionary

A language such as English contains a very large number of lexical items (i.e. words and idioms – see p. 179), and it is the function of a dictionary to list these items, and to give any necessary information (phonological, syntactic, semantic, stylistic, etc.) about the way they fit into the language system. The body of information given about one item may be called a 'lexical entry', and it is probably true that the most important part of a lexical entry, as far as the everyday user of dictionaries is concerned, is the semantic part of it, i.e. the definition. My purpose in this chapter is to investigate the nature of dictionary definitions, against the background of the dictionary as a whole, seen as a store of all the *particular* facts about a language (see p. 179). I shall also consider one important fact that is sometimes overlooked in the discussion of dictionaries: that dictionaries are open-ended, and are continually being adapted to new requirements by the addition of new lexical entries. This 'creative' or 'generative' principle of dictionaries can be accounted for by means of LEXICAL RULES, amongst which are rules of meaning transfer (e.g. rules which enable us to use words in new metaphorical senses). Yet such lexical rules are only *partially productive*, in the sense that they apply only to certain of the cases to which in theory they are applicable; hence the earlier characterization of the dictionary as the 'store of the particular (i.e. ungeneralizable) facts about a language' remains largely valid.

Practical and Theoretical Dictionaries

The preceding paragraph suffers from an unfortunate ambiguity which attends the use of the term *dictionary* as of the term *grammar*. In one sense, a dictionary is a reference book on the living-room or library shelf: in another sense, it is the 'inbuilt dictionary' which every one of us carries around as part of his mental equipment as a speaker of a language. As this book's central purpose is to explore the notion of 'semantic competence' (see p. 6 and elsewhere), it is the dictionary in this second sense (which we may distinguish by the term LEXICON) that is the present

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concern. The problem we shall shortly consider, then, is 'How do we provide a model, or theoretical system of representation, for what the native speaker of a language knows about its lexical items?' But first, some attention must be given to the differences between such theoretical dictionaries and the 'flesh-and-blood' dictionaries – practical dictionaries such as the Concise Oxford Dictionary – which lexicographers compile and which we all consult from time to time.

The first question that calls for explanation is why we need such practical dictionaries at all. If, as native speakers of English, we have our built-in English dictionary, why should we need to consult a dictionary to find out if we are using lexical items properly, any more than we need to consult an English grammar to find out (say) how to turn active sentences into passives? The reason is that the lexicon (as just observed) is open-ended in a way that a grammar is not. Whereas we have learned the grammatical rules of English in all essentials by the age of five, we continue the process of acquiring vocabulary and new uses of vocabulary right the way through our lives. The store of lexical information we carry with us is continually undergoing development and modification, through the written and spoken communications that we receive. Our linguistic education, in this respect, continues long past linguistic maturity in other respects; and to aid the process, culturally institutionalized languages such as English acquire what might be called a 'corporate lexical competence', greater than the lexical competence of any one of its users. This pool of lexical information is what is embodied in the printed dictionary.

This said, it must be recognized that like any 'living' social institution, the dictionary as a reference book adapts to the various needs which society expects it to satisfy. We have learnt to go to 'the dictionary' for all manner of information on words (for example, their history and origin) apart from their form and behaviour in the present-day language: and even for information that may more properly belong to an encyclopedia (such as how to recognize the national flags of the world) or to a book of etiquette (such as how to address an archbishop). Further, the dictionary comes to be looked on as a legislative organ, to which one turns for a standard of 'good' as opposed to 'bad' usage. This attitude is indeed encouraged by the phrase 'the dictionary', with its misleading similarity to 'the Bible'.

More important for our present concern is the tendency for a dictionary definition to go beyond the explanation of the mere sense of an item (see pp. 82–6). Encyclopedic information about the referents of the item is often added for good measure, as in:

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Wolf: Erect-eared straight-tailed harsh-furred tawny-grey wild gregarious carnivorous quadruped allied to dog preying on sheep etc. or combining in packs to hunt larger animals.
(*Concise Oxford Dictionary*)

This definition also exemplifies another unfortunate tendency: the tendency to substitute for the everyday meaning of a word a scientific or technical definition, thus pandering to the popular assumption (to which Bloomfield gave credence – see pp. 2–4) that the scientific explanation of a word is its 'real meaning', and hence that we ordinary users of the language are using the term 'vaguely' or 'inaccurately' if we do not know its scientific definition. To take this view is to deny the premise on which modern linguistic semantics, and the approach adopted in this book, is founded: that the meaning of a linguistic expression is precisely that knowledge which enables one to use it appropriately in linguistic communication, whether in everyday or specialist contexts.

On more practical grounds, such definitions as the above may be criticized because a number of words in the definition (*gregarious* and *carnivorous*, for instance) are far less familiar to the ordinary user of English than the word *wolf* itself. But we should not necessarily blame the lexicographer for embroidering on the bare stuff of meaning in this way. He might justifiably retort: 'How, then, would you define *wolf*?'; and certainly if the view of the meanings of such words on p. 84 is accepted, one could do little more, in a dictionary which aimed to present semantic realities, than define the word as 'an animal of the species "wolf"'. Perhaps a picture of the animal would come closest to the spirit of representing the category signified by the single atomic feature §SPECIES. (One is in sympathy with the compiler of Chambers Dictionary of 1904, who defines *horse* 'the well-known quadruped'.)

But this quandary only arises because of two practical conditions of dictionary-writing. The first is the requirement, which lexicographers have taken upon themselves since the eighteenth century, to make dictionaries comprehensive even to the extent of defining easy words which anyone old enough to use a dictionary understands anyway. In a way, the definition of *wolf* is there 'just for the record', since whatever reason a person may have for looking up *wolf* in the dictionary, it can scarcely be in order to find out its meaning. The second practical condition is more important, because it arises from a basic unavoidable difference between 'practical' and 'theoretical' dictionaries: it is that a practical dictionary definition must consist of words. It has been argued that the lexical definition, as part of the native speaker's linguistic equip-

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ment, can be precisely represented only by a special formal language. Therefore the only completely satisfactory way to represent the meaning of a lexical item on paper must be by the symbols of such a language. But the practical lexicographer cannot use this method of explanation: if he did, he would convey nothing to the average dictionary-user. Instead, he has to resort to a circumlocution, i.e. a type of paraphrase. When he defines, he does not 'give the sense of' the headword (i.e. the word in bold type set against the margin), but provides another expression which *has the same sense as* the headword. If the definition is to be useful, the words it contains must be more widely used and understood than the headword; but as Dr Johnson noted in the preface to his dictionary as early as 1755, such words cannot always be found. Furthermore, there is no guarantee that the expression rules of the language furnish paraphrases for every word in the language. In Johnson's own words:

> Many words cannot be explained by synonimes, because the idea signified by them has not more than one appellation; nor by paraphrase, because simple ideas cannot be described.

In these circumstances, it is not surprising that lexicographers, even where their intention is to avoid doing so, frequently mingle the function of the dictionary with that of the encyclopedia or scientific handbook.

It is easy to criticize practical dictionaries from the lofty vantage-point of theory. These remarks are not intended as a critique of lexicographic practice, but rather as a warning as to the basic differences between a practical dictionary such as the *Concise Oxford Dictionary*, and a theoretical dictionary such as it is the aim of this chapter to investigate.

The Lexicon (or 'Theoretical' Dictionary)

In the remainder of this chapter, then, we shall consider a simplified model (or theoretical plan) of the lexicon of the English language, viewed as part of the competence of the native speaker of English. The lexicon will be considered as an unordered list or set of lexical entries. A lexical entry, in turn, will be considered as a combination of three specifications: a morphological specification (giving the form of the word in terms of stems and affixes); a syntactic specification (classifying the word in terms of its distributional potential within sentences); and a semantic specification (or definition).

The pronunciation and spelling of a word can be most economically shown indirectly, through the MORPHOLOGICAL SPECIFICATION, which breaks the word down into a structure of morphemes (stems and affixes). Such morphemes may obviously occur in a number of different

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words (as the stem *book*, for example, occurs in the words *book*, *bookish*, and *handbook*). This means that apart from the lexicon seen as a set of lexical entries, there must also be a *morpheme index*, which lists morphemes together with their pronunciation and spelling. Thus *book*, in our lexicon, is an indivisible unit and can be represented simply by means of an arbitrary subscript as (say) Stem_{333}, the assumption being that this stem is spelt and pronounced in the same way (subject to certain morpheme combination rules that we cannot go into) wherever it occurs. Affixes can similarly be given arbitrary subscripts.

However, from the psychological point of view, it seems obvious that morphemes must be largely discriminated in the mind of the native speaker by their pronunciation and spelling, rather than by some arbitrary symbolic entity such as a numerical subscript. For this reason, it is both convenient and realistic to represent the morpheme *book* as Stem_{book}, and similarly for other morphemes. So specimen morphological specifications might be:

book	Stem_{book}
bookish	$\text{Stem}_{book} + \text{Suffix}_{ish}$
handbook	$\text{Stem}_{hand} + \text{Stem}_{book}$
book-bindery	$\text{Stem}_{book} + (\text{Stem}_{bind} + \text{Suffix}_{ery})$

From this last specification, it will be seen that the morphological structure of a word, like the syntactic structure of a sentence, may involve the bracketing together of two or more elements into a single compound constituent. Such complex elements (they always contain at least one stem) can be described as *bases* with respect to a larger combination of which they are part. Single stems may also function as bases (as we shall see below, where the notion of *base* will be clarified).

The SYNTACTIC SPECIFICATION of an item consists of a set of features which classify it in terms of primary categories like 'Noun', 'Verb', 'Adjective' (i.e. parts of speech), and secondary categories within these categories such as 'Countable' (Noun), 'Predicative' (Adjective), and so on. Like semantic features, these features are contrastive (e.g. 'Countable' contrasts with 'Mass'), but not necessarily in terms of binary oppositions. Many sub-categorizations are based on syntactic valency (see p. 198), e.g. that between 'Transitive' and 'Intransitive' verbs.

The SEMANTIC SPECIFICATION (or definition) of a word is a representation of its meaning in terms of componential or predicational analysis, as has become familiar in Chapters 6–9. Definitions which consist of a set of contrastive features (e.g. HUMAN ADULT —MALE) have already been sufficiently illustrated, but it may be appropriate to exemplify here something of the variety of types of definition involving *subordinate* and *downgraded* predications. For this purpose, I shall continue

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to use the linear method of representing meanings. By far the largest classes of items in the lexicon are nouns, adjectives, and verbs; and I shall limit my illustrations to these classes. As in previous formulae, *a*, *b*, *P*, *Q*, etc., represent unspecified sets of features.

NOUNS *Type A*: PERSON *a'* ⟨**the'** . →*P* . *b*⟩
i.e. (roughly) 'a person who bears a certain active relationship (*P*) to somebody/something else (*b*)'
bookseller, *king*, *teacher*, *actor*, *coach*, etc.
Type B: PERSON *a'* ⟨**the'** . ←*P* . *b*⟩
pupil, *subject*, *employee*, etc.
Type C: —ANIMATE *a'* ⟨**the'** . *P* . (*X*)⟩
razor, *seat*, *blackboard*, *path*, *vehicle*, *garment*, etc.
Type D: a' ⟨**the'** . →PART . *b*⟩
head, *body*, *arm*, *finger*, *wing*, *roof*, *window*, etc.

Type A represents definitions of 'agent' nouns in a wide sense: that is, nouns denoting the person who has some active role in a relationship (a 'bookseller' is 'a person who sells books [for a living]' etc.). In this and in other types, the second term of a two-place predicate is often null: ⟨**the'** . →*P* . ∅⟩; for example, a teacher is 'a person who teaches [someone or other]'.

Type B represents definitions of 'passive nouns' which are the converse of nouns of *Type A* (e.g. *pupil* is the converse of *teacher*, *subject* is the converse of *king*).

Type C includes definitions of 'function nouns', that is, nouns denoting objects (usually artefacts) which are identified by their functions: *seat*, for example, may be defined as 'an object for sitting on', and *razor* as 'an instrument with which to shave'. That words of this kind lend themselves to definition by functional criteria (rather than or in addition to concrete physical properties of the referent) is shown by the lack of any exhaustive characterization of their meaning in terms of appearance, shape, consistency, etc. There is little in common between safety razors and electric razors in terms of physical appearance; what is in common between them is the fact that they are both made and used for the same purpose. Similarly, it is difficult to think of what Galileo's telescope and a modern radio telescope have in common, apart from their function as instruments for the observation of distant objects.

Type D is the large category of 'part nouns', whether these refer to parts of the human body, parts of other living things (e.g. the trunk, branches, and leaves of a tree), or parts of artefacts (roof, sleeve, handle, etc.). Since 'PART' is a transitive relation, such items often form hierarchies of size: e.g. ship → hull → keel: hand → finger → knuckle.

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ADJECTIVES *Type A*: ⟨**the′** . *P* . *a*⟩
literate, *legible*, *pitiful*, *wealthy*, etc.
Type B: ⟨**not** : (**the′** . *P* . *a*)⟩
illiterate, *blind*, *deaf*, *dumb*, etc.

Type A shows the definition of adjectives by means of a single downgraded predication: *literate* means 'who can read'; *wealthy* 'who has much property', etc. There seems to be a basic difference between nouns and adjectives, in that adjectives are normally defined by a single feature (usually a polar feature such as ↑BIG, or a downgraded predication), while the definitions of nouns typically consist of combinations of features. This difference helps to explain the traditional characterization of an adjective as a word which expresses a 'quality', as opposed to nouns, which often represent classes of 'objects' identifiable by a bundle of such qualities.

Type B is similar to *Type A*, except that the downgraded predication is negative. For both these types, there is often a null argument. E.g., *legible* means 'that [someone] can read', and *blind* means 'who cannot see [anything]'.

VERBS *Type A*: (*a′* . DO . (**the′** : EVENT))
e.g. John *moved*/*jumped*/*walked*/*left*.
Type B: (*a′* . DO . (**the′** . EVENT . *b*))
e.g. John *looked at*/*listened to* the clock.
Type C: (*a′* . BECOME . (**the′** : STATE))
e.g. The door *opened*/*shut*; The bus *stopped*; She *awoke*.
Type D: (*a′* . BECOME . (**the′** . STATE . *b*))
e.g. James *learned*/*found out*/*remembered*/*forgot* my name.
Type E: (*a* . DO . (*b′* . BECOME . (**the′** : STATE))
e.g. Sue *stopped* the bus; She *woke up* the children.
Type F: (*a* . DO . (*b′* . BECOME . (**the′** . STATE . *c*)))
e.g. He *gave*/*sold*/*lent* me a book.

These kinds of verb definition all contain more than one predicate. They contrast in terms of three main factors, which we may call (a) stativity, (b) inceptivity, and (c) action. First, the factor of stativity: we assume (p. 168) that predicates can designate either *events* or *states*. Second, there is a choice of *inceptive* meaning (represented by the higher predicate 'BECOME'). 'BECOME' is the predicate referring to changes of state, and so we assume that it always governs a state predicate. Third, there is a choice of *action*, or what is sometimes called *agentive* meaning (represented by the higher predicate 'DO'). 'DO', in fact, represents the meaning of the pro-verb *do* in such sentences as *What did you DO? What I DID*

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was open the door. This predicate represents a special kind of causation in which an active participant (typically a person) of its own accord instigates or initiates an event. Thus 'DO' governs another predicate, which is an event; the inceptive predicate 'BECOME' is itself an event, and may be governed by 'DO'.

A further variable factor is, of course, the choice between one-place and two-place predicates. On the basis of this factor, for example, we may distinguish *Types A* and *B*, which are both 'action verbs', but differ in that the principal predication is one-place in *Type A* and two-place in *Type B*.

Similarly, both *Type C* and *Type D* are inceptive verbs, but *Type C* is distinguished from *Type D* in that its principal predication is one-place ('be open', 'be stationary', 'be awake'), whereas that of *Type D* is two-place ('know', 'remember', 'forget', etc.). And *Types E* and *F*, which are both action-inceptive verbs, are again distinguished by one-place and two-place predicates respectively. This difference affects the valency of the verb, which is shown by the number of argument-variables (*a*, *b*, *c* ...) the above formulae contain. Thus, the six types of verb definition illustrated may be classified as follows:

Type A:	intransitive action verb	(valency: 1)
Type B:	transitive action verb	(valency: 2)
Type C:	intransitive inceptive verb	(valency: 1)
Type D:	transitive inceptive verb	(valency: 2)
Type E:	monotransitive action-inceptive verb	(valency: 2)
Type F:	ditransitive action-inceptive verb	(valency: 3)

There are many other types of verb-meaning which might have been illustrated, but these show how certain important contrasts of verb-meaning may be represented by means of the subordination of one predication to another.

[NOTE: In earlier illustrations, I treated BECOME as a one-place predicate: but in the above formulae, I have treated it as a two-place predicate, with a special contextual redundancy rule requiring coreference between its initial argument and an argument of the subordinate predication. In this latter interpretation, 'become' has an analysis similar to that of 'try', so that just as 'John tried to be good' has obligatory coreference:

(john' . TRY . (the' : GOOD)) '*John* tried that *he* be good'

so 'John became good' is interpreted:

(john' . BECOME . (the' : GOOD)) '*John* became that *he* be good'

There is no easy way to choose between these analyses; the analysis of 'BECOME' as a one-place predicate is the simpler one, and is in general satisfactory; but the

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analysis of 'BECOME' as a two-place predicate is necessary if we are to distinguish the meanings of sentences such as the following:

(1) (mary' . BECOME . (the' . ↔RESEMBLE . mother))
'Mary came to resemble mother'
(2) (mother' . BECOME . (the' . ↔RESEMBLE . mary)
'Mother came to resemble Mary'

(1) and (2) are alike in meaning in that they describe a change of state resulting in a resemblance between Mary and her mother. But they differ in that (1) implies that the change happened to Mary, whereas (2) implies that the change happened to her mother. This difference would not be represented by the alternative formulae with 'BECOME' as a one-place predicate:

(1a) (BECOME : (mary . ↔RESEMBLE . mother))
(2a) (BECOME : (mother . ↔RESEMBLE . mary))

since (1a) and (2a), because of the mirror-image convention, are equivalent to one another.]

Graded Acceptability

Lexical rules are rules accounting for the 'creative' or 'productive' aspect of the lexicon which allows us to form new words (for example, to coin the noun *uncrumplability* using as a stem the verb *crumple*) or to derive new meanings for existing words (for example, to use the word *gullible* in the phrase *gullible era* to mean 'an era in which people are gullible'). Obviously 'new' is a relative term in this connection: we cannot know whether a given use or coinage such as the above is unique in the history of the English language. But what can be said is that so far as the user is concerned, it could well be unique: it is an individual employment of a principle or rule which is available to users of the language as a means of extending their lexical repertoire.

Lexical rules not only explain how new lexical entries come into existence on the basis of old ones, but also explain the interrelationships of derivation that we recognize between lexical entries already established in the language.

The examples of *uncrumplability* and *gullible* just given belong traditionally to two different aspects of linguistic study: WORD-FORMATION and TRANSFER OF MEANING. In what follows, I shall suggest that these two processes, which have a great deal in common, are best subsumed under the single notion of LEXICAL RULE.

What chiefly distinguishes lexical rules from grammatical rules is their limited productivity; that is, a lexical rule does not apply equally well to all the cases to which in theory it *may* apply. This can be clarified by an example:

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We can trace new substances by various means
→(a) *New substances can be traced by various means*
→(b) *New substances are traceable by various means.*

From the initial sentence we may predict the acceptability of sentence (a), through the grammatical rule which relates active to passive sentences; likewise, for many cases, we can predict the acceptability of sentence (b), in which the passive meaning is conveyed by lexical means, through the suffix *-able*. But the difference lies in the fact that for many other cases, the application of the rule to produce (b) does not work: if the active verb had been *try*, *find*, or *get*, the (b) sentence would contain the adjectives **triable*, **findable*, and **gettable*, words absent from the regular English lexicon, although the verbs from which they are formed are very common. **Triable*, **findable*, and **gettable* are, we may say, *potential* English words, in the sense that they are well-formed according to rules and word-formation; but they happen not to have become established members of the English lexicon. (I am not saying that such words never occur, but that if they do occur, it will be with an air of strangeness, novelty, jocularity, etc.) To put the point more generally: we have to distinguish, with reference to lexical rules,

(1) the ACTUAL ACCEPTABILITY of lexical entries which have attained institutional acceptance.

(2) the POTENTIAL ACCEPTABILITY of any lexical entry that can be generated by a lexical rule.

(3) the UNACCEPTABILITY of a lexical entry not allowed for in the lexical rules at all. For example **sheepable* (where the deverbal suffix *-able* is added onto the noun stem *sheep*) is not a possible English word at all – unless we imagine that *sheep* has been already converted into a verb.

It is in the realm of *actual* acceptability that we encounter the haphazard or idiosyncratic nature of the lexicon (that characteristic which makes it proper to describe the dictionary as 'the list of all the particular facts about a language'). And we may notice in passing that this same characteristic is seen in the arbitrariness of the phonological make-up of morphemes: *mat*, *met*, *bat*, *bet*, and *rat* are all English morphemes but **ret* is not. Nonsense syllables like **ret* are, we may say, 'potential morphemes', formed according to the rules of English phonology; they are therefore distinct from completely un-English combinations such as **shtrumpf*, in the same way as **gettable* is distinguished from **sheepable*.

Actual acceptability is a graded concept. If, for example, we take a list of English nouns and add to them the suffix *-less*, it will be impossible to say exactly at what point unacceptability 'sets in':

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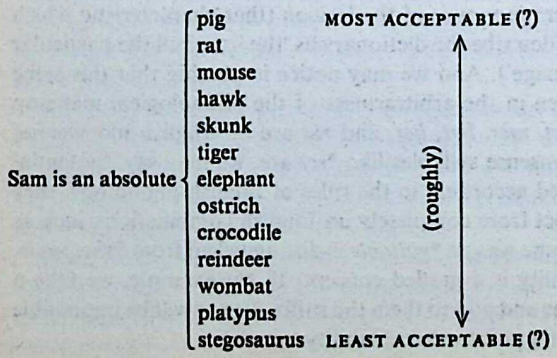
-LESS: (a) *helpless*; (b) *friendless*; (c) *boyless*; (d) *houseless*; (e) *growthless*.
-SOME: (a) *troublesome*; (b) *fearsome*; (c) *scornsome*; (d) *joysome*; (e) *vanitysome*.
-EN: (a) *wooden*; (b) *silken*; (c) *larchen*; (d) *bronzen*; (e) *aluminiumen*.

The words in each of the three groups above are arranged roughly (according to my own judgement) in order of acceptability. No doubt if we heard any of the words labelled (c), (d), or (e) we would react to each of them with some feeling of surprise as to 'nonce formations', that is, as words made up on the spur of the moment for a temporary purpose. On the other hand, most English speakers would feel that, say, (e) in each group is less likely to be invented than (c).

A second notion of graded acceptability applies not to the individual instances, but to the rules themselves. Of the three suffixation processes illustrated above, the first (noun + *-less*) is more productive than the second (noun + *-some*), and the second is more productive than the third (noun + *-en*), which is indeed scarcely productive at all in present-day English.

The principle of partial productivity that we have seen to operate in suffixation can be observed equally clearly not only in other types of word-formation, such as prefixation and compounding, but in semantic transfer. If we take metaphor as one type of semantic transfer, then a 'dead metaphor' is one which has gone all the way towards complete assimilation as a separate definition of the word concerned (as *hit* in the sense 'successful pop song').

On the other hand, there are many metaphors which are 'moribund' rather than dead (e.g. *hawk* in the sense 'a person with warlike attitudes'). To illustrate degrees in the assimilation of a figurative meaning, let us examine the way in which animal words are applied metaphorically (and usually unflatteringly) to human beings:



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The parallel between this and affixation is seen to be extremely close if we compare such metaphorical extensions of meaning with the adjectives produced when the suffix *-y* is added to the nouns above: *piggy*, *ratty*, *mousy*, *hawky*, *skunky*, ... Although there are differences in the acceptability of corresponding items, we notice the same sort of scale of assimilation; and since the function of the suffix is quasi-metaphorical (e.g. *piggy* means 'like a pig'), there is also a close parallel of meaning.

Types of Lexical Rule

From what we have seen above, it is possible to think of semantic transfer, whether metaphorical or otherwise, in terms of a lexical rule in which the morphological and syntactic specifications of the item remain the same, and only the semantic specification changes. Both morphological derivation and semantic transfer, therefore, can be seen as instances of the same basic process of extending the repertoire of lexical entries. Yet a further type of lexical rule is that which usually goes under the name of *conversion*; that is, a change in the syntactic function (and usually the meaning) of an item without a corresponding change in morphological form. An example of a rule of conversion is that which enables us to form from nouns verbs with the meaning 'to put into ...' or 'to put onto ...':

(1) He *pocketed* the change. ('He put the change into his *pocket*.')
(2) He *netted* the ball. ('He put the ball into the *net*.')
(3) ?She *basketed* the shopping. ('She put the shopping into her *basket*.')
(4) *They *carred* all their belongings. ('They put all their belongings into the *car*.')

We note once again the partial productivity which is the hallmark of lexical rules: (1) and (2) are well-established conversions which any good dictionary will record; (3) is only dubiously acceptable, and (4) is definitely outside the range of normal usage, although it is not inconceivable.

The Form of Lexical Rules

We are now in a position to state the general form that lexical rules take, in such a way as to include within the same formula morphological derivation, conversion, and semantic transfer.

The formula at its most general is a derivation of one lexical entry from another as follows:

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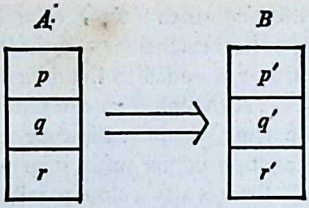

(where A and B are lexical entries; p is a morphological specification; q is a syntactic specification; and r is a semantic specification).

A rule of *morphological derivation* involves a change in the morphological specification; for example, the addition of an affix to the original morphological specification, which is called the *base*:

GENERAL FORM OF RULE:	EXAMPLE:
$p_1 \Rightarrow p_2$	Base ⇒ Base + Suffix_{less}
$q_1 \Rightarrow q_2$	Noun ⇒ Adjective
$r_1 \Rightarrow r_2$	$a \Rightarrow \langle$**not** : (**the** . HAS . a)$\rangle$
(e.g. *friend* ⇒ *friendless*)	

Usually, the morphological change is accompanied by a change of syntactic function and a change of meaning, as in the above example, which gives a skeleton lexical rule for the addition of *-less* to a noun. In some cases, however, there is no change of syntactic function: the addition of *-ie* to *aunt*, for example, does not affect the function of the word as a human countable noun. In fact, there is in this case probably no change of conceptual meaning either, since the difference between *aunt* and *auntie* appears to be a matter of stylistic meaning alone. For compound formation, the same general form of lexical rule operates, except that a base has attached to it, instead of an affix, a further base. A compounding rule is therefore a 'coalescence' of two lexical entries to form a third.

A rule of *conversion* is a lexical rule which involves a change of syntactic function without a change of morphological specification:

GENERAL FORM OF RULE:	EXAMPLE:
$p_1 \Rightarrow p_1$	Base ⇒ Base
$q_1 \Rightarrow q_2$	Verb, Transitive ⇒ Noun, Concrete, Countable
$r_1 \Rightarrow r_2$	$\rightarrow P \Rightarrow \emptyset' \langle$**the'** . $\leftarrow P$. $\emptyset\rangle$
(e.g. *catch* [Verb] ⇒ *catch* [Noun] (= 'that which is caught'))	

This is an approximate statement of the rule which explains the existence of the noun *catch* as used in the sentence *The fishermen had a large catch*. Other nouns that can be used similarly are *bet*, *hope*, *drink*, *find*, *bag*,

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haul, *bite*, *kill*. The change of syntactic specification is almost invariably accompanied by a change of semantic specification, as in this case. Conversion, as defined by this form of rule, does not necessarily involve a change of the major part of speech. There are many rules which bring about a change of secondary syntactic classification; for example:

Mass noun ⇒ count noun (e.g. *an embarrassment*; *two teas*; *how many sugars?*)

Count noun ⇒ mass noun (e.g. *an area of* TABLE; *half an inch of* CIGARETTE)

A rule of *semantic transfer* is a lexical rule which brings about a major change in the semantic specification only. The rule of metaphoric extension has already been mentioned as an example of this:

GENERAL FORM OF RULE:	EXAMPLE:
$p_1 \Rightarrow p_1$	Base ⇒ Base
$q_1 \Rightarrow q_1$	Noun ⇒ Noun
$r_1 \Rightarrow r_2$	$a \Rightarrow \emptyset'$ ⟨the′ . ↔SIMILAR . a⟩

The rule as stated here goes only some way to an explanation of metaphor: it merely says that for a meaning '*a*' we substitute the meaning 'something similar to *a*'. The ground or warranty for the comparison is something that has to be read into the formula. For example, *doughnut* in the phrase *a doughnut of mud* requires us to imaginatively fill in the details of the way in which a piece of mud may be seen as like a doughnut (e.g. being round, soft and sticky). Additionally, the metaphoric rule is more general than most, because it can apply to various parts of speech, not just to nouns, as in the formulation above. A final limitation of this formula is that it does not fully explain the poetic use of metaphor as a means of 'conceptual fusion', as argued in Chapter 3. The everyday use of metaphor illustrated here keeps its feet firmly on the ground, in the sense that the literal meaning remains paramount: a doughnut of mud remains solidly and palpably a piece of mud, not a mysterious fusion of 'doughnutness' and 'muddiness' of the kind that, it has been suggested, characterizes poetic language.

Other types of semantic transfer are often designated *metonymy* in traditional terminology. Examples are:

1. The neighbourhood objected to his plans.
   (*neighbourhood* = 'people in the neighbourhood')
   The whole town turned out to welcome us.
   (*whole town* = 'all the people living in the town')

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2. I enjoy Shakespeare immensely.
   (*Shakespeare* = 'the works of Shakespeare')
   That sounds like early Beethoven.
   (*early Beethoven* = 'the early works of Beethoven')

3. Nothing like it has happened since Napoleon.
   (*Napoleon* = 'the time of Napoleon',
   'the time when Napoleon lived')
   After the bomb, nothing could be the same again.
   (*the bomb* = 'the invention of the bomb')

Each pair of examples illustrates a different rule, statable approximately as follows:

1. $a \Rightarrow$ HUMAN′ ⟨the′ . IS IN/ON . a⟩
   (where a contains a feature of 'place')
2. $a \Rightarrow \emptyset'$ ⟨the′ . ←WRITE . a⟩
   (where a contains the feature 'HUMAN')
3. $a \Rightarrow$ time′ ⟨the′ . ←AT . (X)⟩
   (where the embedded predication X contains a)

This third rule, which might be read: 'the time at which something to do with a happened', exemplifies a type of metonymic rule which is like the metaphoric rule in that it introduces variable information (similar to the variable 'ground' of a metaphor). That is, we interpret the content of X as 'the invention of a', 'the life of a', 'the founding of a', etc., according to context.

But whatever differences there may be between one rule and another, for all lexical rules the change of semantic specification is in essence the same, in that the new specification (r_2) includes the old specification (r_1). In most cases (as in the three metonymic rules above), the result is that the old specification is 'pushed down' into a subordinate position within r_2, usually the position of an argument in a downgraded predication. In this position it no longer governs the selection restrictions of the lexical item, so that (for instance) as a result of Rule 2 above it is possible to say

John knows his *great authors* off by heart.
I've been reading some *Dickens*.
Any *old master* is worth more than its weight in gold these days.

using nouns which are originally personal nouns in contexts appropriate to nouns of non-human reference. (Incidentally, these examples show that a proper noun can also become grammatically reclassified as a common noun – the transfer of meaning is often accompanied by a

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secondary syntactic conversion.) We might note that by a further metonymy, such proper names can be treated as concrete inanimate nouns:

John threw his *Shakespeare* at Peter's head.
His wife owns a gilt-framed *Rembrandt*, which she keeps in a secret room.

As the cases of metonymy so far considered apply primarily to nouns, it is as well to conclude this exemplification with a rule which applies to a different word class – specifically to adjectives which refer to emotional or other inner states, and attribute these in the first instance to animate (especially human) beings. Such adjectives as *sad*, *friendly*, *melancholy*, *gay*, *dismal*, *sincere* are 'on their home ground', we may suppose, when they are being used with a human noun (*sad child*, *friendly person*, etc.); but they are frequently used in a transferred sense of 'expressing or evincing X' (where X is the emotional or other inner state): *a sad face*, *a friendly greeting*, *gay clothes*, *a sincere answer*, etc. Yet a further transferred sense (sometimes not easily distinguished from the last) is that of 'causing or evoking inner state X', as in *a sad story*, *a melancholy landscape*, *a thirsty meeting*, *a dismal failure*.

From all these examples, it is easy to see how rules of transfer take on importance in the interpretation of sentences which are at face value absurd in one way or another, particularly through a violation of selection restrictions (see p. 141). Confronted with a combination such as

'The floor was more humane than the platform'

our first reaction is probably one of bafflement and surprise that the most obvious interpretations of the words are impeded by an absurdity (the absurdity of treating the inanimate floor and platform as if they were human). Our subsequent strategy is to find a rule of transfer which will render sensible what is apparently senseless (a strategy which is rather like directing traffic along a diversion when a main road is blocked). The most obvious solution here is to apply rule (1) above, and so to construe *floor* and *platform* as the 'people on the floor' and 'people on the platform', in the sense which is an established metonymy in discussions of public meetings. A second solution, less obvious, would be to apply the rule which interprets *humane* as 'expressing or evincing humaneness' – a meaning that might possibly be intended by someone who found the floor more comfortable to sit on than the platform, and thus regarded it as showing a greater degree of humaneness in the architect who designed it.

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urther Observations about Lexical Rules

There are a number of further points I wish to make about lexical rules, in order to emphasize (a) that these rules are surprisingly powerful in their ability to generate new lexical entries; and (b) that the bringing together of morphological derivation, conversion and semantic transfer as instances of the same general phenomenon is motivated by other common characteristics, apart from their partial productiveness. The five properties of lexical rules I shall dwell upon are (1) their diversity; (2) their semantic open-endedness; (3) their recursiveness; (4) their bi-directionality; and (5) their tendency to be distorted by the 'petrification' of lexical entries. The meaning of these various terms will be clear from what follows.

1. Diversity

The first point to notice is that the *diversity* of lexical rules is such as to allow the possibility of applying a large number of different rules to the same lexical entry. This is obvious enough in any case with regard to morphological affixation (consider the range of complex words derived from the noun *man*—*manly*, *manlike*, *mannish*, *manhood*, *unman*, *unmanly*, etc.). But it is less noticeable that rules of semantic transfer have a similar diversity, which can lead to many potential ambiguities in the meaning of a single item, such as the adjective *human*:

1. *human* offspring	'human' (HUMAN)
2. *human* race	'(race) consisting of HUMAN'
3. *human* voice	'(voice) of HUMAN'
4. *human* elephant	'(elephant) like a HUMAN'
5. *human* consumption	'(consumption) by HUMAN'
6. *human* experimentation	'(experimentation) on HUMAN'

Definitions 2–6 here can all be seen as derived from the basic definition HUMAN, definition 1. One way to define a rule of semantic transfer, in fact, is as a 'rule which creates new instances of polysemy or multiple meaning'.

2. Open-endedness

The power of lexical rules to proliferate meanings lies not only in their variety, but in the fact that in some cases they are semantically open-ended, allowing the language-user freedom to read into a new lexical entry whatever information he finds necessary to the understanding of it. This element of imaginative 'reading-in' has already been noted in connection with the unspecified ground of comparison in a metaphor.

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But it can also be present in metonymic transfers, more especially in imaginative writing, in the sense that there may be not just a single path of semantic connection to be traced, but a whole range of possibilities, between which there seem to be no clear criteria of choice. When Frank Kermode in his book *Romantic Image* describes Henry James as 'the detached, ironical, adverbial James', we might wonder in what sense can a writer be *adverbial*? Could it be 'James, who likes adverbs', 'James, who uses many adverbs', 'James, who is given to modifying his remarks by adverbs'? The expression appears to communicate at a level which includes all these and many other possibilities, and any attempt to construct an explicit rule to link this use of *adverbial* to the dictionary definitions of that term would be a falsification. Instead, we must be content with the most general rule possible, producing the open-ended definition ⟨**the** . *P* . adverbs⟩ '(James) who has some-connection-or-other with adverbs'. It is up to the reader to fill in this unknown quantity *P* as best he may.

The semantic bridge can also be vague, and often extraordinarily indirect, with compounds, especially compounds formed by the joining together of two or more nouns. Although there are certain well-trodden paths of connection, sufficiently clear to be formulated as separate lexical rules, for many compounds *X*-*Y* it seems as if the most general rule '*X* which-has-something-to-do-with *Y*' is the only one broad enough to include all the idiosyncratic readings that are possible. Consider the following three cases (in the latter two of which the first element *X* is itself a compound):

X – *Y*	
hunger strike	'strike in which hunger, rather than withdrawal of labour, is the weapon'
gunboat diplomacy	'diplomacy which relies on the use of gunboats or other demonstrations of force'
shotgun wedding	'wedding which results from the bride's father's threatening the prospective bridegroom with a shotgun'

The semantic connections are so idiosyncratic here that if one devised three specific transfer rules to account for them, they would have no use other than to account for a single example each. In any case, the circumlocutory explanation given on the right is only one of many possible verbalizations of the connection. Here as elsewhere, we must acknowledge the distinction between *ambiguity* (which results from diversity of specific rules) and *vagueness* (which results when general rules invite the 'reading-in' of indefinitely variable specific information). One

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of the problems of lexicology must be to draw the line between these two phenomena, which can be similar in their effect, but which are totally different in theory.

3. Recursiveness

A third property which contributes to the power of lexical rules is their *recursiveness*, by which I mean the ability of a lexical entry which is the *output* of one lexical rule to be also the *input* to another lexical rule. If we remember that a lexical entry consists in a trio of specifications *p*, *q* and *r*, then the operation of this recursive principle may be represented by a sequence as follows:

$$\left\{\begin{matrix} p \\ q \\ r \end{matrix}\right\} \Rightarrow \left\{\begin{matrix} p' \\ q' \\ r' \end{matrix}\right\} \Rightarrow \left\{\begin{matrix} p'' \\ q'' \\ r'' \end{matrix}\right\} \Rightarrow \left\{\begin{matrix} p''' \\ q''' \\ r''' \end{matrix}\right\} \Rightarrow \ldots$$

Again, on the morphological level, the results of the principle are not difficult to observe. From single stems, it is possible to build up stage by stage as follows a complex word like *drum-majorettishly*:

drum, major ⇒ drum-major ⇒ (drum-major)-(ette)
⇒ ((drum-major)-(ette))-(ish) ⇒ (((drum-major)-(ette))-(ish))-(ly)

The same principle is illustrated by complex noun-sequences such as *railway-station refreshment room*, composed by a multiple application of the noun + noun compounding process.

An example of recursiveness in rules of conversion is the noun *bag* (in the sense of 'a catch, that which is caught or bagged'). This is derivable from the verb *bag* (='to put in a bag, to catch'), which in turn is derived from the noun *bag* (='a limp receptacle'). Thus the three stages of the derivation process may be pictured as:

{*bag*, (noun), 'limp receptacle'} ⇒
{*bag*, (verb), 'to put in a limp receptacle'} ⇒
{*bag*, (noun), 'that which is put in a limp receptacle'}

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Less noticeably, the same recursiveness of the derivation process can be observed in semantic transfer:

1. *topless dress*: '(dress) which has no top'
2. *topless dancer*: '(dancer) wearing a dress which has no top'
3. *topless bar-service*: '(bar-service) provided by girls wearing dresses with no top'

These three examples (the latter two from an issue of *Where to Go*, a magazine giving details of amusements in London) show the progressive 'pushing-down' of the basic literal meaning of the adjective. In a rough semantic notation, the three definitions can be represented as follows:

1. ⟨not : (the′ . HAVE . top)⟩
2. ⟨the′ . WEAR . dress″ ⟨not : (the″ . HAVE . top)⟩⟩
3. ⟨the′ . ←PROVIDE . girls″ ⟨the″ . WEAR . dress‴ ⟨not : (the‴ . HAVE . top)⟩⟩⟩

An even more indirect interpretation of *topless* is evoked by the headline: TOPLESS BAN AT EARLS COURT which appeared in a Sunday newspaper in October 1969, when a model wearing a topless dress was forbidden to appear at the Earls Court Motor Show.

But illustrations of the recursiveness of semantic transfer need not be so exotic as this. Quite frequently, adjectives derived from proper-names have a similar development:

1. *Wagnerian opera*: '(opera) written by Wagner'
2. *Wagnerian heroine*: '(heroine) of an opera written by Wagner'
3. *Wagnerian heroine*: '(heroine) like a heroine of an opera written by Wagner'

The third step of this progression is an application of the rule of metaphoric transfer, common in adjectives of this kind: for example, *Homeric epic* may mean 'epic by Homer' or 'epic like that by Homer'; *Stygian gloom* may mean 'the gloom of the Styx' or 'gloom resembling (in its profundity) the gloom of the Styx'. This metaphoric step may also be observed, in retrospect, in the examples of multiple compounding mentioned earlier: *a shotgun wedding* is not necessarily a wedding at which the bride's father brandishes a shotgun; more generally, it is a wedding *resembling* such a wedding (in that the bridegroom is forced to marry the bride through parental pressure on account of the bride's pregnancy). Likewise, *gunboat diplomacy* does not necessarily involve the use of gunboats: it can be diplomacy relying on menaces of a different kind. From all these examples, we can see how semantic transfer leads to a 'tele-

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scoping' of semantic relations, so that much meaning comes to be compressed into a small space.

4. Bi-directionality

Up to this point I have represented the process of lexical derivation by a single-headed arrow (⇒), and have treated it as a uni-directional, or irreversible process. Now I wish to suggest that it might be better regarded as a two-directional process, and so more appropriately represented by a double-headed arrow (⇔).

First, however, let us consider what 'derivation' means. There are two senses in which a lexical entry L_2 can be regarded as uni-directionally derived from another entry L_1. One is the historical sense: L_1's occurrence in the language may predate the occurrence of L_2 and may be supposed, by historical causation, to have given rise to L_2. The other sense is a purely formal one, in which the lexical entry L_2 *includes* L_1 (in terms of its morphological form or semantic content). Thus whatever the historical facts of the case, it is natural to regard *kingly* as derived from *king*, because *king* is morphologically part of *kingly* and its meaning is presupposed by that of *kingly*. Historically, the simpler entry normally precedes the more complex one, and therefore the historical and formal notions of derivation coincide. But there are cases of 'back-formation' where the process has taken place in the opposite direction. In English, for example, the verb *peddle* (first recorded in 1532) appears to be historically derived from the noun *pedlar* (first recorded in 1377) by a reversal of the rule for deriving agent nouns from verbs. *Televise* (1927) is historically derived from *television* (1909). Other examples of back-formation are *reminisce* from *reminiscence*, *edit* from *editor*, and a growing class of verbs which have arisen by 'metanalysis' from compound nouns: *housekeep* from *housekeeper/housekeeping*, similarly *lip-read*, *vacuum-clean*, *brain-wash*, etc.

Since historically the derivation can move in either direction, it is arguable that lexical rules should be formulated (for the purpose of representing linguistic competence) in a bi-directional form, the predominance of derivations from the simpler to the more complex form being regarded simply as a matter of historical probability. One advantage of this position is that it helps the treatment of conversion: it disposes of the chicken-and-egg problem (often vexing to students of word-formation) as to which of two morphologically identical items is the base, and which is the derived form. For example, which is to be regarded as the base, and which as the derived form, *goad* as a noun or *goad* as a verb? If we relate this item to cases like the following:

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wrap (verb)—*wrap* (noun = 'a garment with which to wrap oneself')
cover (verb)—*cover* (noun = ' thing with which to cover something')

the temptation is to see this as a case of verb-to-noun conversion (*goad* = 'an implement with which to goad an animal'). But the inclination will swing in the opposite direction on consideration of a further set of parallel cases:

knife (noun)—*knife* (verb) (= 'to stab with a knife')
pin (noun—*pin* (verb) (= 'to fasten with a pin')
whip (noun)—*whip* (verb) (= 'to beat with a whip')
glue (noun)—*glue* (verb) (= 'to fix with glue')

The Oxford English Dictionary tells us that historically the verb *wrap* antedates the noun, while the noun *knife* antedates the verb; but all this shows is that there is reason to see the process of conversion as bi-directional, just as morphological derivation is seen to be bi-directional through instances of back-formation. Furthermore, there is a similar phenomenon in semantic transfer: we have assumed that with adjectives like *sad*, the basic meaning is that of 'being in an inner state X', and that from this may be derived the transferred meaning 'causing or evoking inner state X'; with *comfortable*, however, the historical movement seems to have been in the opposite direction: it may be that the meaning 'bringing ease or comfort' gave rise to a later meaning 'being in a state of ease or comfort'. Thus although the general tendency is for the simpler entry chronologically to precede the more complex one, we must allow, in all major types of lexical rule, for derivation to take place in either direction. This bi-directionality is yet another factor which adds to the power of lexical rules to produce new entries, and underlines the gap of unused 'capacity' between the theoretically enormous generative power of lexical rules, and the comparatively limited use that is made of them in practice.

5. *'Petrification' of lexical meanings*

As the discussion of lexical rules has already strayed into a historical dimension, it is worth observing that semantic transfer by metaphor or metonymy is among the most important mechanisms by which, in the history of a language like English, words extend and change their meanings. In fact, the study of the lexicon is at the crossroads of a historical and contemporary (*synchronic*) view of language; the lexicon is at once a storehouse of the results of applying lexical rules to the past, and a model for the present and future application of those rules. But on the semantic level, there is almost inevitably an uncomfortable lack of fit between the

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lexical entries that arise theoretically from the application of a lexical rule, and the actual lexical entries we find in the lexicon. This is partly because the effect of subsequent linguistic history is often to obscure an originally regular relation between different lexical definitions; and partly because even at the outset of its institutional existence in the language, a lexical entry usually denotes a more limited area of reference than is theoretically allowed for by the lexical rule. The whole process by which an institutionalized lexical meaning diverges from the 'theoretical' meaning specified in a lexical rule may be termed *petrification* (a term which, I hope, will suggest both the 'solidifying' in institutional form of a lexical entry, and the 'shrinkage' of denotation which often accompanies this process).

An example of the institutional narrowing of lexical meaning is provided by the two compound nouns *wheel-chair* and *push-chair*. The rules which originally gave rise to these compounds suggest definitions as follows:

wheel-chair 'chair which has wheels'
push-chair 'chair which one pushes'

but of course, a 'wheel-chair' is *more* than a chair with wheels, and a 'push-chair' is *more* than a chair which one pushes: to these partial definitions we must add the criteria which in practice narrow down the reference of the two terms: that *wheel-chairs* are 'for invalids' and that *push-chairs* are 'for infants'. The particular force of this illustration is, of course, that without the institutional factors which have limited the meanings of these compounds, one would feel free to use *wheel-chair* and *push-chair* interchangeably (since wheel-chairs can be pushed, and all push-chairs have wheels). A second illustration is the more recent compound *trouser-suit*, which in practice means not just 'suit with trousers' but 'suit with trousers *for women*'.

Further examples of 'petrification' have already been met in earlier sections of this chapter. Thus the verbs *bag* and *corner*, interpreted according to rule as 'to put into a bag' and 'to put into a corner', have in actual usage acquired the further elements of meaning italicized:

bag (verb): 'to put *X* in a bag (*X being game or winnings*)'
corner (verb): 'to put *X* into a corner *so that X cannot escape*'

Additional historical developments have included the denotative broadening of the meaning of *bag* (verb) to become almost equivalent to 'catch' (one can bag a criminal without using a bag); also the metaphorical extension of *corner* (verb) to refer to any situation in which a person is trapped by an adversary. Yet in spite of these changes, we still recognize these

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words as exemplifying the living rule of conversion given on p. 215, and therefore see them as parallel to *pocket, net*, etc., and other similar examples of nouns used as verbs.

A type of 'petrification' mentioned earlier in another connection is the process by which a metaphor becomes 'dead'. Various stages can be seen in this process: the first stage of 'petrification', almost inevitable in an institutionalized metaphor, is that the reference and ground of the comparison become limited by convention; in that, for example, *a fox* is '*a person* who is like a fox *in that he is cunning*' as opposed, say, to 'an animal which is like a fox in that it has a pointed nose'. A further stage is reached when the transferred definition loses its analogical feeling, so that *fox* is felt to be virtually synonymous with *a cunning man*. But even at this stage, a feeling of the link between the literal and transferred meanings may persist. The stage of absolute 'deadness' is reached only when the literal meaning has died out entirely (as it has, for instance, with *thrill*, derived from an Old English word meaning 'to bore or pierce'); or else, when the literal and transferred meanings have diverged psychologically to the extent that no connection is felt between them any more. Probable examples of this second circumstance are *crane* ('machine for lifting'), derived, presumably by a visual metaphor, from *crane* ('type of bird'); and *mess* ('dirty or untidy state of affairs'), derived from the now rare *mess* ('dish of food'). (For a survey of these and other examples, see R. Waldron, *Sense and Sense Development*, pp. 173–85.)

Homonymy and Polysemy

The convergence of historical and synchronic approaches to the lexicon brings us finally to a problem which has been a longstanding matter of concern for students of semantics: how does one draw the line between *homonymy* (roughly 'two or more words having the same pronunciation and/or spelling') and *polysemy* ('one word having two or more senses')? The conventional rule-of-thumb answer to this is that we recognize a case of polysemy if the senses concerned are related. But when we ask what 'related' means, there are two answers, one historical and one psychological, which do not necessarily coincide. Two meanings are *historically* related if they can be traced back to the same source, or if the one meaning can be derived from the other; two meanings are *psychologically* related if present-day users of the language feel intuitively that they are related, and therefore tend to assume that they are 'different uses of the same word'. As we have seen with *mess* and *crane*, historically related meanings are not always psychologically related; oppositely, there are cases where historically unrelated forms are felt to be related psycho-

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logically. Examples cited for English (see S. Ullmann, *Semantics: An Introduction to the Science of Meaning*, p. 164) are *ear* ('organ of hearing' and 'ear of corn') and *weeds* ('wild, useless plants' and 'mourning garments worn by widow'). In both these cases the etymologies of the two meanings are quite different:

ear ('organ of hearing')	Old English *ēare* (compare Latin *auris*, 'ear')
ear ('head of corn')	Old English *ēar* (compare Latin *acus, aceris*, 'husk')
weed ('wild useless plant')	Old English *wēod* 'weed'
weeds ('mourning garments worn by widow')	Old English *wǣd* 'garment'

Nevertheless, people often see a metaphorical connection between them, and adjust their understanding of the words accordingly. Thus what from a historical point of view is a homonymy, resulting from an accidental convergence of forms, becomes reinterpreted in the context of present-day English as a case of polysemy.

If the account of the lexicon given in this chapter is accepted, then its contribution to the solution of the homonymy–polysemy problem is that it clarifies the meaning of 'psychologically related'. We may, in fact, say that two lexical meanings are 'psychologically related' if a user of the language is able to postulate a connection between them by lexical rules, e.g. by the rule of metaphoric transfer. This definition gains substance from the recognition that lexical rules have psychological reality, to the extent that they are part of the native-speaker's linguistic competence; also, from the recognition that the interpretation of existing lexical entries is as much a function of lexical rules as is the creation of new lexical entries.

An issue that this chapter has not so far clarified, however, is the definition of 'lexical item', i.e. the definition of what a 'word' is as far as the dictionary is concerned. One entity which *has* been precisely defined is the lexical entry, seen as a trio (p, q, r) of specifications morphological (p), syntactic (q) and semantic (r). Two useful ways to define 'lexical item' are:

(1) a bundle of lexical entries sharing the same morphological specification p_1
(2) a bundle of lexical entries sharing the same morphological specification p_1 and the same syntactic specification q_1.

The second definition makes us say that any two lexical entries related

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by conversion belong to different lexical items (e.g. *face* as noun and *face* as verb), while the first makes us regard these as variants of the same lexical item. Both definitions, on the other hand, bring together within a single lexical item cases of polysemy such as *face* (noun – 'front part of head') and *face* (noun – 'front part of clock'). In deciding where to begin a new headword some dictionary-compilers follow the first definition, and some the second.

The choice between definitions (1) and (2) is simply a matter of terminological convenience – to be pedantic, perhaps one should use a separate term for each (say *lexical item* for definition (1) and *lexeme* for definition (2)). Using either definition, we can explain polysemy happily enough as 'the existence of more than one semantic specification for the same lexical item'; and we can also define homonymy as the existence of more than one morphological specification sharing the same phonological or graphic form. Homonyms such as *mole* 'animal' and *mole* 'excrescence on skin' are then identified as different stems, Stem_i and Stem_j, which happen to have the same pronunciation and/or spelling. In this way, some rather traditional ways of looking at words and dictionary entries can be accommodated in, and clarified by, a formal account of the lexicon.

Conclusion

We have seen in this chapter that the 'limited productivity' characteristic of lexical rules is found just as much in semantic transfer as in morphological derivation and syntactic conversion. Thus figurative meanings, far from being excluded from a formal theory of semantics, can be placed within a more general understanding of how lexical rules and lexical definitions operate.

This leads to the recognition of the important point (often overlooked in syntax as well as in semantics) that acceptability and deviation are gradable, not absolute yes-or-no concepts. This does not mean that the earlier accounts of contradictions and other violations of the semantic system (pp. 148–50) have to be revised. Rather, we point out that a sentence which is contradictory or otherwise absurd on one interpretation may *become* sensible through the operation of rules of transfer of meaning: acceptability therefore becomes a question of the ease with which a lexical rule may provide us with an alternative interpretation, if the face-value or literal interpretation is ruled out as a violation. An apparently ridiculous utterance such as *My uncle has recovered from his incurable disease* becomes sane through a semantic transfer which interprets 'incurable', for instance, not as 'that cannot be cured', but as 'that someone thought

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or claimed could not be cured'. Metaphor, irony, and similar effects cannot be legitimately separated from a formal account of the conceptual and logical structure of meaning.

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12. Colour and Kinship: Two Case Studies in 'Universal Semantics'

What do We Mean by Semantic Universals?

One of the recurring speculations of linguistics is: how far is it possible to apply the same semantic analysis to all natural languages? How far, that is, are the rules and categories of meaning, such as we have considered in the past six chapters, characteristics of the human faculty of language, wherever it may manifest itself? It is commonly felt that the 'deeper' one gets into the substructure of language (i.e., the further one abstracts from the physical substance of language towards its conceptual content) the nearer one gets to a common core of linguistic universals.

But debate about universals can easily become confused unless certain distinctions are made. The first distinction is that made by Chomsky (1965: pp. 27–30) between *formal* and *substantive* universals. Formal universals are, roughly, general characteristics or rules of language construction such as must be postulated by anyone who aims to construct a general linguistic theory; substantive universals, on the other hand, are universal characteristics of human language in terms of what units or elements or components a language contains. On the semantic level, we may associate formal universals with 'universal rules of logical structure' and substantive universals with 'universal categories of conceptual content'. Examples of statements postulating each type are:

(a) 'All lexical definitions in all languages are analysable as a set of components.' (*formal*)
(b) 'All languages have the contrast between "animate" and "inanimate".' (*substantive*)

The distinction between the two types of universality is not clear in all details, but it is easy enough to see why the first kind need not presuppose the second. Any serious linguistic theory must put forward some general hypotheses about the nature of human language, otherwise it ceases to have any interest except as an *ad hoc* procedure for analysing this language or that. (Thus, by aspiration at least, the proposals made in the past six chapters of this book regarding a model of semantic analysis have been statements about the universal character of human language: they would fail in generality if it were discovered that they were inapplic-

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able to some languages.) Belief in formal universals, that is, is usually taken for granted by any theoretically inclined linguist.

On the other hand, a linguistic theory can get on quite well without substantive universals, and may in fact deny their existence. One can postulate some general principles of syntactic structure, for instance, and deny that there is some category 'noun' which is identical in all languages. Similarly for semantic analysis: one can believe in the applicability of componential analysis to all languages, without insisting that all languages make use of a contrast between ADULT and −ADULT. Hence most of the discussion and disagreement on this subject centre round substantive universals.

A second distinction, within the category of substantive universals, should be made between a strong and weak interpretation of what 'universal' means. The strong version of a universal hypothesis would say 'all languages have a category *x*'. But common observation of variation between languages convinces us that in many cases at least, a claim of this strength is false. So with semantic features, as with phonological features, it is natural for a weaker version of a universal hypothesis to be proposed. This claims that 'There exists a universal set of semantic features, of which every language possesses a subset'. Pressed to its furthest extent, this hypothesis is so weak as to be vacuous: it could be satisfied by the limiting case of a purely 'Whorfian' world (p. 27) in which every language possessed its own set of unique features, and in which there was no degree of conceptual identity between languages at all. In practice, such a hypothesis becomes less weak to the extent that we are able to discover that the *same* semantic categories are operating in *different* languages. But the decision to espouse the weak universal hypothesis for semantic features and oppositions is a matter of principle rather than substance at the present stage of our knowledge: it means that categories of meaning can be regarded as 'language-neutral', i.e. as belonging to the common human faculty of language rather than to the ability to speak this language or that. 'Language-neutral hypothesis' might, indeed, be a better term to use for this case than 'universal hypothesis'. I shall nevertheless adhere to the usual practice of referring to both cases as 'universal', distinguishing where necessary between *strong* universality (= 'all languages contain *x*') and *weak* universality (= '*x* is a member of a universal set').

One reason for the tentativeness of discussion of semantic universals has been until recently a scarcity of detailed research on the comparison of conceptual systems in different languages. But there are two notable exceptions to this generalization. Much attention has been given to the semantic fields of colour and kinship – two fields that have attracted

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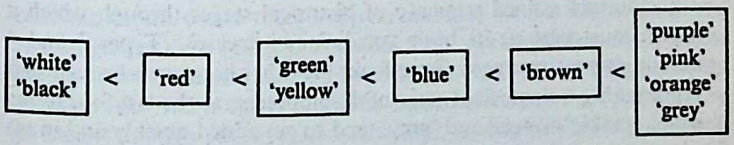
the analyst's attention both because of their intrinsic interest to anthropologists and others, and because of their relative isolability, as conceptual spheres, from the rest of the language. Rather than give any speculations of my own on semantic universals, therefore, I shall give a brief and simplified account of semantics in these two areas, and from this draw what conclusions I can about the plausibility of a 'universalist' view of meaning.

Colour Terminology: The Hypothesis of Berlin and Kay

In the field of colour terminology, the study by Berlin and Kay *Basic Color Terms* (already discussed in Chapter 3, pp. 24, 27) was based on a comparison of almost a hundred languages. Berlin and Kay's book was remarkable not only for its coverage of data from a wide range of diverse languages, but also for the surprising claim it made for universalism on a terrain previously regarded as a happy hunting-ground for relativist semantics. It has, in the past, seemed almost too easy to show that the systems of colour terminology of different languages differ widely and unpredictably in the way they cut up the 'continuum of colour'. Contrasting colour-charts for such languages as Hanunóo and English (see p. 25) show this clearly in diagrammatic form. Yet from the unpromising diversity of material from every major part of the world, Berlin and Kay arrived at the bold hypothesis that there is a universal set of exactly eleven colour categories, from which each language takes a subset.

The claim of Berlin and Kay was an unusually precise one: not only did they say there are eleven basic categories ('white', 'black', 'red', 'green', 'yellow', 'blue', 'brown', 'purple', 'pink', 'orange' and 'grey'), but that these categories are ordered (or in strict mathematical terms, partially ordered) as shown:



The ordering relation indicated by the symbol < represents 'conditional universality', and is explained as follows: for any two colour categories [*x*] and [*y*], [*x*] < [*y*] means that if a language contains *y*, it must also contain *x*. On this basis, it is possible to set up a small number of major types of colour vocabulary (Type 8 in the table is a category subsuming Berlin and Kay's Types 8–22):

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Type	*No. of terms*	*List of Terms*	*Example of language*
1	two	'white', 'black'	Jalé (language of the New Guinea highlands)
2	three	'white', 'black', 'red'	Tiv (Nigeria)
3	four	'white', 'black', 'red', 'green'	Hanunóo (Philippines)
4	four	'white', 'black', 'red', 'yellow'	Ibo (Nigeria)
5	five	'white', 'black', 'red', 'green', 'yellow'	Tzeltal (Mexico)
6	six	'white', 'black', 'red', 'green', 'yellow', 'blue'	Plains Tamil (India)
7	seven	'white', 'black', 'red', 'green', 'yellow', 'blue', 'brown'	Nez Perce (North American Indian)
8	eight, nine, ten, or eleven	'white', 'black', 'red', 'green', 'yellow', 'blue', 'brown', purple', and/or 'pink' and/or 'orange' and/or 'grey'	English

The difference between Types 3 and 4, it will be seen, is not a question of the number of terms, but of whether 'green' or 'yellow' is the fourth term added: there is a possibility that either 'green' occurs without 'yellow' or that 'yellow' occurs without 'green', so that no ordering relation can be set up between these two categories. The four colours 'purple', 'pink', 'orange' and 'grey' are unordered for the same reason, and for convenience are placed together in the table.

To the hypothesis so far stated Berlin and Kay added a further 'evolutionary' hypothesis, which stated that the types of vocabulary as ordered above represent a fixed sequence of historical stages through which a language must pass as its basic vocabulary increases. (Types 3 and 4 represent alternative stages; Type 8, on the other hand, can be regarded as representing a single final stage of development, as the last four terms 'purple', 'pink', 'orange' and 'grey' tend to get added quickly and in no fixed order.)

To anyone familiar with the apparent arbitrariness and diversity of colour terminologies, their comparative uniformity according to Berlin and Kay looks too good to be true. But Berlin and Kay made it clear that the neatness of this picture depends upon our acceptance of two important assumptions. The first assumption is that it is reasonable to draw a line between 'basic' colour terms and other colour terms of secon-

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dary importance. For example, *white*, *red* and *green* are judged basic colour terms in English on such criteria as:

(1) the fact that their range of reference is not included in that of any other colour term (as *scarlet* and *crimson* refer to types of *red*).
(2) the fact that they are not restricted in reference to a small number of objects (as *blonde* is largely restricted to hair).
(3) the fact that the meaning of the whole word is not predictable from the meaning of its parts (as it is in such cases as *blue-green*, *bluish*, *lemon-coloured*).

The second assumption is that since people are able to judge the focus or centre of a colour range more easily and consistently than they can judge its periphery, colour concepts should be identified by the foci rather than the boundaries of their range of reference. Accordingly, in a three-colour system, the terms 'white', 'black' and 'red' will obviously spread themselves over a wider range of hues and intensities of colour than they will within an eleven-term system; but because their foci are in close correspondence, it will still be possible to identify them as 'the same category'. One consequence of this interpretation of colour terms is, of course, that many objects that would be labelled by the 'red' term in one language would not be labelled by the 'red' term in another: accordingly the 'red' term in one language would not be infallibly translated by the 'red' term in another. Nevertheless, the important point is that within this system, colour semantics ceases to be completely arbitrary, and becomes predictable within quite narrow limits. As Berlin and Kay were keen to point out, there are, mathematically, 2,048 possible combinations of eleven categories, whereas only twenty-two types actually occurred in their data.

Since the publication of Berlin and Kay's study in 1969, there has been much controversy over their theory of colour terms, and new evidence has been adduced both in its favour and against it. There is also uncertainty over the details of the theory. Berlin and Kay noted, for instance, that two languages were exceptional in that they appeared to have twelve basic colour terms (Russian has two basic terms in the 'blue' area, and Hungarian in the 'red'), and it has been argued since (by Forbes 1979) that French is another twelve-colour language, having two basic terms, *brun* and *marron*, corresponding to 'brown'. In fact one of the authors (Kay, 1975) has proposed a revision of the theory, in which the position of 'green' in the diagram is taken by a new basic term 'grue', which, as its name suggests, is a cover term for 'green or blue'. But however much opinions may vary, psycholinguistic evidence (see Clark and Clark, 1977, pp. 524–7) points strongly to the conclusion that the relative uniformity of colour semantics in different languages has much to do with the uni-

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formity of the human apparatus of visual perception. Whatever language a person speaks, he will tend to perceive certain focal colour stimuli as more salient than others; and his language, too, will tend to discriminate colours on the basis of these perceptually salient areas.

Kinship Semantics: the Componential Method

Like colour terminology, kinship terminology offers the fascination of a relatively homogeneous set of lexical meanings whose organization differs markedly from language to language, and yet somehow has an underlying element of uniformity. In this case, however, the common ground between languages is cultural rather than perceptual. It is no accident that the most important contributions to this field have come from scholars with a primary interest in anthropology, such as F. G. Lounsbury and W. H. Goodenough, who were the first to develop the technique of componential analysis (see Chapters 6 and 7) to any degree of sophistication. Later, Lounsbury developed a different method of analysis, which we shall not discuss in this chapter, involving rules of reduction – see Lounsbury 1964a, 1964b, 1965, D'Andrade 1970.

Like colour terminologies again, kinship terminologies have traditionally provided linguistics with scope for the airing of 'relativist' ideas, since the categories of kinship manifestly differ radically from one language or culture to another. But there is also scope for the universalist – we see this from the fact that the 'data' for an analysis of kinship terminology are normally presented in terms of a universal or at least language-neutral set of symbols such as F = 'father', M = 'mother', B = 'brother', S = 'sister', s = 'son', d = 'daughter', H = 'husband', W = 'wife'.

The technique of componential analysis (see Goodenough 1956, 1965, 1970; Lounsbury 1956, 1964a) starts with identifying the range of reference of a term by a list of 'denotata', or specific relationships expressed in terms of the above symbols. Thus the range of the term *uncle* in English can be specified as:

> FB ('father's brother', MB ('mother's brother'), FSH ('father's sister's husband') or MSH ('mother's sister's husband').

The task of analysis is then to set up and justify the significant dimensions of contrast and the components of meaning which distinguish the use of one term from that of another. This entails finding common features in each of the denotata of a term (as 'male' 'collateral' and 'one generation above the person from whom the relation is being traced' are features common to the four denotata of *uncle* listed above); so that the disjunctive referential specification of a term (as '*x*' OR '*y*' OR '*z*' ...) is translated into a componential, *con*junctive listing of features ($a + b + c$).

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In English, it is obvious that the dimension of sex (MALE/—MALE) is important as a distinguishing factor – it is the sole feature that separates 'uncle' from 'aunt', 'brother' from 'sister', etc. Another opposition of significance for English kinship usage is the distinction between *lineal* kin (related by vertical descent on the family tree) and *collateral* kin (whose connection involves a horizontal link between two siblings on the family tree). Brothers, aunts, nephews, cousins, etc., are all collateral, while fathers, daughters, grandparents, grandchildren, etc., are all lineal.

As an exemplification of the method, here, much simplified, is part of Lounsbury's analysis of the kinship semantics of an American Indian (Iroquois) tribe, the Seneca (Lounsbury, 1964a). *Table I* gives a part of the data on which Lounsbury bases his analysis: the data given here covers only consanguineal (blood-related) kin within one generation of ego. (Incidentally, we use the terms *ego* and *alter*, according to anthropological convention, to refer respectively to the person from whom the relationship is traced, and the person who is actually referred to in the kinship term. Thus in the phrase *Charlie's aunt*, Charlie is ego, and his aunt is alter.)

It may reassure the reader later to know now that kinship analyses have a mind-teasing quality of mathematical puzzles. The only cure for bafflement is to think hard and hope that the light will dawn!

TABLE I

1. *haʔnih* 'my father'	F; FB; FMSs, FFBs, FMBs, FFSs, FFFBss, etc.	A
2. *noʔyēh* 'my mother'	M; MS; MMSd; MFBd, MMBd, MFSd, MMSdd, etc.	A
3. *hakhnoʔsēh* 'my uncle'	MB; MMSs, MFBs, MMBs, MFSs, MMMSds, etc.	B
4. *akeːhak* 'my aunt'	FS; FMSd, FFBd, FMBd, FFSd; FFFBsd, etc.	B
5. *hahtsiʔ* 'my elder brother'	B; MSs, FBs; MMSds, FFBss, MFBds, FMSss, MMBds, etc. (when older than ego)	C
6. *heʔkēːʔ* 'my younger brother'	(same, when younger than ego)	C
7. *ahtsiʔ* 'my elder sister'	S; MSd, FBd; MMSdd, FFBsd, MFBdd, FMSsd, MMBdd, etc. (when older than ego)	C
8. *kheʔkēːʔ* 'my younger sister'	(same, when younger than ego)	C

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TABLE 1 *Cont.*

9. *akyä:ʔse:ʔ* 'my cousin'	MBs, FSs; MMSss, FFBds, MFBss, FMSds, MMBss, etc. *also:* MBd, FSd; MMSsd, FFBdd, MFBsd, FMSdd, MMBsd, etc.	D
10. *he:awak* 'my son'	(a) s; Bs; MSss; FBss; MBss; FSss; MMSdss, etc. *for male ego* (b) s; Ss; MSds, FBds, MBds, FSds; MMSdds, etc. *for female ego*	E
11. *khe:awak* 'my daughter'	(a) d; Bd; MSsd, FBsd, MBsd, FSsd; MMSdsd, etc. *for male ego* (b) d; Sd; MSdd, FBdd, MBdd, FSdd; MMSddd, etc. *for female ego*	E
12. *heyẽ:wõ:tẽʔ* 'my nephew'	Ss; MSds, FBds, MBds, FSds, MMSdds, etc. *for male ego*	F
13. *hehsõʔneh* 'my nephew'	Bs; MSss, FBss, MBss, FSss; MMSdss, etc. *for female ego*	F
14. *kheyẽ:wõ:tẽʔ* 'my niece'	Sd; MSdd, FBdd, MBdd, FSdd, MMSddd, etc. *for male ego*	F
15. *khehsõʔneh* 'my niece'	Bd; MSsd, FBsd, MBsd, FSsd, MMSdsd, etc. *for female ego*	F

The glosses 'father', 'cousin', etc., are not to be mistaken for English translations of the Seneca words: they are no more than roughly corresponding labels, chosen on the grounds that the *nearest* kinsman denoted by the Seneca term would be denoted by that term in English. Like the labels 'black', 'white', etc., for colour categories, they represent merely a useful terminological convention.

Rather than follow the steps of Lounsbury's argument, I shall simply present and explain the results of his analysis, changing the symbols in order to make them easier to understand in the context of this book. The data have already been prejudged by *Table I*, to the extent that certain groupings, A, B, C, D, E, F have been indicated. The solid horizontal lines, it will be seen, separate different generation groups:

Members of A, B are one generation senior to ego
Members of E, F are one generation junior to ego
Members of C, D are of the same generation as ego.

These features can be symbolized >GENERATION 'senior generation', <GENERATION 'junior generation' and =GENERATION 'same generation' respectively. For example: the definition of (1) *haʔnih* 'my father' will contain the feature >GENERATION, while that of (10) 'my son' will contain the feature <GENERATION. Of the other dimensions of contrast, two are fairly easy to recognize. First, there is the familiar contrast of

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sex (±MALE) on the basis of which all the terms in *Table I* (except *akyä:ʔse:ʔ* 'my cousin') can be paired off with other terms: for example, with respect to sex, term 1 'father' contrasts with term 2 'mother', and term 3 'uncle' contrasts with term 4 'aunt'. Second, there is the contrast of seniority ±SENIOR which applies only to the sibling terms 5–8 ('elder/younger brother' and 'elder/younger sister').

The contrast which is most difficult to understand is that which is marked on *Table I* by broken lines: i.e. what is it that distinguishes Group A from Group B, Group C from Group D, and Group E from Group F? Certainly the English 'translations' do not help here. In English and other well-known languages the major dimension of contrast, apart from generation and sex, is collaterality: it is this, for example, which primarily distinguishes the meanings of *uncle* and *father*, or of *daughter* and *niece*. But in the Seneca data, kin of different degrees of collaterality are bracketed together under the same kinship category: for example, F (father), FB (father's brother), and FFSs (father's father's sister's son), are all denoted by the term *haʔnih*.

A different kind of semantic contrast must therefore be sought. For the senior generation Groups A and B, we can bring together *haʔnih* 'father' and *noʔyẽh* 'mother' on the grounds that the sex of alter is the same as the sex of the linking parent of ego; whereas this is not the case with *hakhnoʔsẽh* 'uncle and *akeːhak* 'aunt'. The matching kin are italicized in:

1. *haʔnih* 'father'	*F*; *F B*; *F* M S *s*; *F* F B *s*; etc.	match
2. *noʔyẽh* 'mother'	*M*; *M S*; *M* M S *d*; *M* F B *d*; etc.	match
3. *hakhnoʔsẽh* 'uncle'	*M B*; *M* M S *s*; *M* F B *s*; etc.	do not match
4. *akeːhak* 'aunt'	*F S*; *F* M S *d*; *F* F B *d*; etc.	do not match

[In the case of the simple father and mother relations F and M, the equivalence-of-sex criterion is satisfied vacuously, by the fact that alter and the linking parent are one and the same person.] It can be seen that for the first terms 1 and 2, the sex of the italicized relations is the same, while for terms 3 and 4 it is different.

If we now look at Groups E and F, we find that they contrast with one another in a way which is similar to that in which Groups A and B contrast. In Group E, ego is of the same sex as alter's linking parent: that is, for a male ego, the last symbol but one in each formula is male; whereas for a female ego, the last symbol but one is female. (Once again, in the case of the simple son and daughter relationships, the criterion of equivalence of sex is satisfied vacuously by the fact that ego and the parent of alter are identical.) In Group F, on the other hand, there is a difference of sex between ego and alter's linking parent. Because the sex of ego enters into the definition of Groups E and F, it is quite natural

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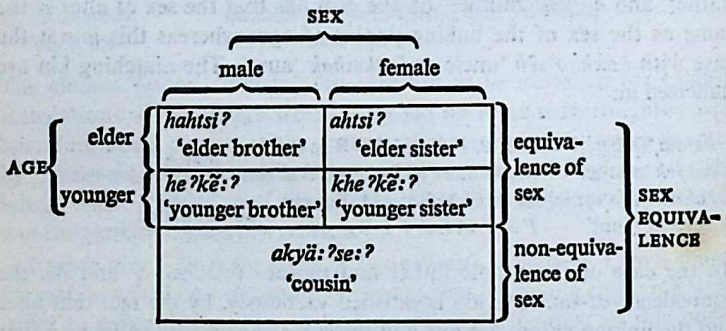
that the denotation of the terms for 'son' and 'daughter' varies according to whether ego is male or female. But in spite of this, it is possible to give a unified definition for each term: for *khe:awak* 'daughter', for example, it is sufficient for a definition to specify, in addition to >GENERATION −MALE, that alter's linking parent is of the same sex as ego.

The third and final set of terms to examine are those belonging to Groups C and D: the 'brother'/'sister'/'cousin' terms. If we look back at *Table I*, we see that there is a major contrast between the 'brother'/'sister' terms on the one hand and the 'cousin' term on the other. For Group C, the linking parent of ego and the linking parent of alter are of the same sex, whereas this is not the case for Group D. For example, FBs ('father's brother's son') is classed as a 'brother', while FSs ('father's sister's son') is classed as a 'cousin': the test here is whether the first and penultimate symbols of the denotative formula match in sex. (In the case of direct siblings, the symbols B and S can be expanded as Fs or Ms, Fd or Md, in which case the first and penultimate symbols are again identical.) In diagrammatic terms, the oppositions of these five terms can be represented as follows:



Notice now that we come across three contrasts which differ slightly but are all concerned with equivalence of sex between relatives of the same generation. For senior generation kin, the question to be answered 'yes' or 'no' is: Is there a sex equivalence between ego's linking parent and alter? For junior generation kin, the question is the converse of this: Is there a sex equivalence between ego and alter's linking parent? And for kin of the same generation as ego, the question is: Is there a sex equivalence between ego's linking parent and alter's linking parent?

In the conclusion of his analysis, Lounsbury says that these are all instances of the same semantic contrast, so that the analysis can be simplified by using a single componential opposition, which we may now symbolize ±PARALLEL and specify as follows:

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+PARALLEL: 'There is equivalence of sex between the two kin of the generation above ego or alter (which ever of those is junior)'

−PARALLEL: (The negative of the above)

The choice of label reflects the anthropological distinction between 'parallel cousins' and 'cross cousins'.

Referring back to *Table I*, we may now see that the broken horizontal lines separating classes A from B, C from D, and E from F, in fact correspond to the +PARALLEL/−PARALLEL distinction. For =GENERATION terms, there is a further opposition of seniority, which may be represented ±SENIOR; and to separate the field of kinship as a whole from other fields of meaning, the feature KIN may be included. With these additions, the componential definitions of terms 1–15 finally run as follows:

1. *haʔnih* 'my father'	KIN >GENERATION +PARALLEL +MALE
2. *noʔyēh* mother'	KIN >GENERATION +PARALLEL −MALE
3. *hakhnoʔsēh* 'my uncle'	KIN >GENERATION −PARALLEL +MALE
4. *akeːhak* 'my aunt'	KIN >GENERATION −PARALLEL −MALE
5. *hahtsiʔ* 'my elder brother'	KIN =GENERATION +PARALLEL +MALE +SENIOR
6. *heʔkēːʔ* 'my younger brother'	KIN =GENERATION +PARALLEL +MALE −SENIOR
7. *ahtsīʔ* 'my elder sister'	KIN =GENERATION +PARALLEL −MALE +SENIOR
8. *kheʔkēː* 'my younger sister'	KIN =GENERATION +PARALLEL −MALE −SENIOR
9. *akyäːʔseːʔ* 'my cousin'	KIN =GENERATION −PARALLEL
10. *heːawak* 'my son'	KIN <GENERATION +PARALLEL +MALE
11. *kheːawak* 'my daughter'	KIN <GENERATION +PARALLEL −MALE
12. *heyēːwōːtēʔ* 'my nephew'	KIN <GENERATION −PARALLEL +MALE
13. *hehsōʔneh* 'my nephew'	KIN <GENERATION −PARALLEL +MALE
14. *kheyēːwōːtēʔ* 'my niece'	KIN <GENERATION −PARALLEL −MALE
15. *khehsōʔneh* 'my niece'	KIN <GENERATION −PARALLEL −MALE

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Further extensions and refinements of this analysis are discussed by Lounsbury; but this brief and simplified sketch has, I hope, illustrated the method well enough. Componential analysis is a technique for analysing the kinship semantics of each language in its own terms, without any prior assumptions about a universal set of potential components of kinship. But prior assumptions are to be found in the data of analysis, the so-called 'denotata'. The fact that the data for each language are expressed in terms of the elemental family relationships of the 'nuclear family' (F, M, B, S, d, s, H, W) in itself implies a universal or language-neutral conceptualization of basic kinship relations, even though anthropologists may disagree as to the precise significance of these universal categories, and even though the cultural interpretation of the categories varies from one language to another. To call the formulae F, MB, MSd, etc., 'data' is in fact a misnomer, for these are themselves linguistic formulae in need of interpretation. Could it be that the nuclear-family concepts embodied in these formulae are the language-neutral categories from which the varied and more complex systems of different languages can be derived? If so, there will be a universal 'key' to kinship terminology, resembling the universal colour-set of Berlin and Kay.

A Predication-Componential Analysis of Kinship Semantics

Here it is worth recalling the limitations of componential analysis, which led me to postulate in Chapter 8 an additional layer of analysis, in terms of predications. One of the chief reasons for introducing predication analysis is the need to account for relational structures of meaning, as opposed to purely classificatory structures. That kinship terms involve relational structures is obvious: any expression like *Bill's mother* expresses a relation between two people, identified by the generalized labels *ego* and *alter*. Therefore why not try treating relationships *as* relationships, instead of reducing them to taxonomic classes? Predication semantics should be well adapted to the analysis of kinship terms.

I shall now outline English kinship semantics in terms of predication analysis as well as componential analysis. My goals will be (a) to show how certain advantages arise from using the predication method, and (b) to explore, within a different framework, the question raised at the end of the last section, regarding the relation between universal and language-specific aspects of kinship semantics. (To simplify matters I shall concentrate on blood-relationships (consanguineal) rather than relationships via marriage.)

A fair amount of progress can be made towards a predication-

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componential analysis of kinship terms by simply using the two oppositions of sex and parenthood:

$$\begin{cases} +\text{MALE 'male'} \\ -\text{MALE 'female'} \end{cases} \quad \begin{cases} \rightarrow\text{PARENT 'is parent of'} \\ \leftarrow\text{PARENT 'is child of'} \end{cases}$$

We see that the second opposition is a relative opposition (p. 102) because of the converse relation between 'parent' and 'child':

John is a parent of Joe is synonymous with *Joe is a child of John.*

The relation of parenthood/childhood indeed underlies all asymmetric converse relations between sets of kinship terms (as 'uncle' and 'aunt', for example, are converse to 'nephew' and 'niece').

On the predication level, all kinship relations are represented as downgraded (qualifying) predications (pp. 144–8). Thus the meaning of *a boy's mother* can be represented:

(1) $-\text{MALE}'\langle \text{the}' . \rightarrow\text{PARENT} . \text{HUMAN} -\text{ADULT} +\text{MALE}\rangle$

And the definition of *mother* by itself can be represented in the same way, except that the second argument (denoting ego) is null:

(2) *mother*: $-\text{MALE}'\langle \text{the}' . \rightarrow\text{PARENT} . \emptyset\rangle$
'female (who is) parent of ...'

On this basis, a term like *grandfather*, the meaning of which includes a chain of two parental relationships, can be defined by means of one downgraded predication within another:

grandfather: $+\text{MALE}'\langle \text{the}' . \rightarrow\text{PARENT} . \emptyset'' \langle \text{the}'' . \rightarrow\text{PARENT} . \emptyset\rangle\rangle$
'male (who is) parent of (someone who is) parent of ...'

Definitions of this kind fit the pattern of noun definition exemplified on p. 209. In fact, all kinship terms have definitions which fit this kind of format. It is therefore convenient to adopt a simplified notation in which we omit the brackets, the definite operators, and the indices of coreference. What is more, even the null feature symbol '$\emptyset$' can be omitted as predictable, because no English kinship term contains any specification of the sex of ego or of linking kin. With all these omissions, the above definition of *grandfather* is reduced to a skeletal form as follows:

$+\text{MALE} . \rightarrow\text{PARENT} . . \rightarrow\text{PARENT} .$

It is consequently possible to define a whole set of English kinship terms fairly simply as follows (*Note*: The two points '..' signal a null argument (except for the presence of the downgraded predication) – i.e. an unspecified linking kin):

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father: +MALE.→PARENT.
mother: −MALE.→PARENT.
son: +MALE.←PARENT.
daughter: −MALE.←PARENT.
grandfather: +MALE.→PARENT..→PARENT.
grandmother: −MALE.→PARENT..→PARENT.
grandson: +MALE.←PARENT..←PARENT.
granddaughter: −MALE.←PARENT..←PARENT.
great grandfather: +MALE.→PARENT..→PARENT..→PARENT.
(etc.)

Having observed that the oppositions of 'sex' and 'parenthood' account without difficulty for the definition of lineal kin terms, let us now see if these two oppositions can provide definitions of collateral kin:

brother: +MALE.←PARENT..→PARENT.
sister: −MALE.←PARENT..→PARENT.
uncle: +MALE.←PARENT..→PARENT..→PARENT.
aunt: −MALE.←PARENT..→PARENT..→PARENT.
nephew: +MALE.←PARENT..←PARENT..→PARENT.
great niece: −MALE.←PARENT..←PARENT..←PARENT.
.→PARENT.

On the face of it, these seem to be adequate definitions; for example, the definition of brother is spelt out as:

'male child of parent of...'

But the alert reader will notice that this definition errs in making the claim that every male person is his own brother. If Boris's brothers, for instance, are all those people who are male children of Boris's parents, then Boris must be his own brother. Putting it more technically, this definition wrongly makes out the 'sibling' ('brother-or-sister') relationship to be reflexive (p. 105). Notice, too, that all the other definitions of collateral kin above have a parallel flaw: according to the definitions of *uncle* and *aunt*, one's father is also one's uncle, and one's mother is also one's aunt.

We must conclude that to account for collateral kin terms within a system of componential-plus-predicational analysis, it is necessary to bring into play a further semantic primitive, namely the relation of 'siblinghood'. This is represented with a double-headed arrow, because siblinghood, though irreflexive, is symmetric (p. 104); that is '*x* is a sibling of *y*' entails '*y* is a sibling of *x*'. Now *brother*, *sister*, etc., are redefined:

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brother:	+MALE.↔SIBLING.	'male sibling of...'
sister:	−MALE.↔SIBLING.	'female sibling of...'
uncle:	+MALE.↔SIBLING..→PARENT.	'male sibling of parent of...'
aunt:	−MALE.↔SIBLING..→PARENT.	'female sibling of parent of...'
nephew:	+MALE.←PARENT..↔SIBLING.	'male child of sibling of...'
great niece:	−MALE.←PARENT..←PARENT..↔SIBLING.	'female child of child of sibling of...'

So long as the 'sibling' relation is defined as irreflexive, as well as symmetric, this analysis gets round the problem of defining siblings so as to exclude ego. But the relation ↔SIBLING is not really a new semantic primitive at all, for its significance can be derived from the already used opposition 'parenthood'. To explain what *sibling* means, we need only say that 'siblings are two *different* people who share the same parent(s)'. A formulaic version of this statement is as follows:

Rule of implication (*A*):

'x.←PARENT..→PARENT.y' *entails* 'x.↔SIBLING.y' where $x \neq y$.

i.e. 'x is the child of the parent(s) of y' entails 'x is the sibling of y' (so long as x is not identical to y).

This special 'rule of implication' (a notion to be more fully explained in Chapter 13) defines the 'derived' relation of siblinghood in terms of the more basic relation of parenthood.

As we have just seen, with the help of the 'sibling' relation, more remote collateral relations, such as *uncle*, can also be represented. The same applies to relatives of more than one degree of collaterality, that is to those who are denoted by the blanket term *cousin* in its wide sense:

First cousin: ←PARENT..↔SIBLING..→PARENT.
Second cousin: ←PARENT..←PARENT..↔SIBLING..→PARENT..→PARENT.

Third cousin: ←PARENT..←PARENT..←PARENT..↔SIBLING..→PARENT ..→PARENT..→PARENT.

(etc.)

Although I do not wish to challenge a purely componential analysis on the lines of Lounsbury and Goodenough for the limited purpose of analysing and classifying kinship terminologies, the analysis using both components and predication structures has certain advantages which are

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not to be ignored, as well as showing how kinship semantics can be integrated within a general theory of meaning.

Firstly, it correctly represents converse (p. 103) relations between kinship terms (e.g. between *parent* and *child*, between *grandparent* and *grandchild*, between *uncle-or-aunt* and *nephew-or-niece*, etc.). These converse relations are exhibited through the mirror-image relation of one formula to another. Thus, barring the feature of sex, which is variable, the formulae for *uncle* and *aunt* read from left to right are the same as the formulae for *nephew* and *niece* read from right to left.

Secondly, it correctly represents symmetric or mutual kinship relations, such as that between sibling and sibling, and that between cousin and cousin. These symmetric relations are shown by symmetrical formulae – i.e., formulae which read the same from left to right as from right to left.

Thirdly, it correctly indicates how more indirect kinship relations can be decomposed into a combination of more direct ones. For example, the following circumlocutions identify relations we would place in the category 'niece', and this is shown by the fact that the specifications of their meaning are subsumed in the definition of niece (i.e. are the same as the 'niece' formula except that they contain extra features):

brother's daughter: −MALE.←PARENT.+MALE.↔SIBLING.
sister's daughter: −MALE.←PARENT.−MALE.↔SIBLING.
niece: −MALE.←PARENT..↔SIBLING.

Similarly, one could show that all the following refer to first cousins of Malcolm:

Malcolm's uncle's son *Malcolm's father's sister's daughter*
Malcolm's mother's nephew *Malcolm's mother's brother's daughter*
etc.

It would not be difficult to show how this sort of analysis can be used to explain a large number of entailments, inconsistencies, tautologies, and contradictions – in short, a large number of basic statements (see p. 73) – which a semantic analysis, within the present conception, ought to be able to account for. (The ability to account for these basic statements is, indeed, what I mean when I say above that the analysis 'correctly' represents certain facts.) Here are examples of basic statements derivable from the analysis, and illustrating the three advantages I itemized above:

'Bill is Jake's father' is synonymous with 'Jake is Bill's son'.
(converseness of 'parent'/'child' relation)
'Bill is Kate's cousin' is synonymous with 'Kate is Bill's cousin.'
(symmetry of 'cousin' relation)

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'Susan is Mrs Brown's daughter's daughter' entails 'Susan is Mrs Brown's granddaughter.'

(decomposition of *granddaughter* into *daughter's daughter*)

But for a fuller analysis of English kinship usage, one would need to grapple with further problems. Consider, for example, the above definition of *uncle* as +MALE.↔SIBLING..→PARENT. This deals only with blood-related uncles (FB, MB) and leaves out of consideration uncles related through marriage (FSH, MSH). For a fuller definition of *uncle*, therefore, one would have to introduce an optional marriage link:

uncle: +MALE[.↔MARRY.].↔SIBLING..→PARENT.

(the square brackets indicate optionality)

Even this is not an entirely adequate definition, since – as Goodenough points out in his study of Yankee kinship terminology (Goodenough 1965) – not everyone who marries an aunt is regarded as an uncle.

Consider also the terms *ancestor* and *descendant*. The system of analysis given so far would not be able to yield unitary definitions of these terms. Instead, the meaning of *descendant* would have to be presented rather as an indefinitely large set of defintions like this:

.←PARENT..←PARENT.	'grandchild' or
.←PARENT..←PARENT..←PARENT.	'great grandchild' or
.←PARENT..←PARENT..←PARENT.←PARENT.	'great great grandchild'
(etc.)	or ... (etc.)

Ancestor would have to be defined similarly, as the converse of *descendant*. But this multiple, open-ended specification of the meaning of a single word runs counter to the principle, taken for granted in the last chapter, that a definition should be a single specification consisting of a finite number of features (p. 189). We would like to show that 'grandchild', 'great grandchild', etc., are hyponyms of 'descendant', and yet avoid the recursive listing which was given above as a makeshift definition for *descendant*. One reason why this recursive definition is unsuitable is that it suggests that *descendant* is infinitely ambiguous, and that in one sense it is a synonym with *grandchild*, in another sense it is a synonym with *great grandchild*, and so on indefinitely. So to avoid making this absurd claim, let us formulate another rule of implication like that which introduced the 'sibling' relation:

Rule of implication (*B*):

(i) 'x.→PARENT.y' entails 'x.→LINEAL 1 GENERATION .y'

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(ii) 'x.→LINEAL ..→PARENT.y' entails 'x.→LINEAL .y'
i GENERATION $i+1$ GENERATION

i.e. (i) One's parent is one's first-generation ancestor, and
(ii) One's parent's ith generation is one's own $i+1$th-generation ancestor (where i is any positive whole number)

The effect of this two-part rule is to derive from the relation of 'parenthood' two new semantic oppositions: the relative opposition of 'lineal descent' (→LINEAL/←LINEAL) and the hierarchic opposition of 'generation' (1 GENERATION/2 GENERATION/... etc.). One result of the rule is that for terms such as *father*, *grandfather*, etc., there are two different but (largely) equivalent definitions:

+MALE.→PARENT..→PARENT.= +MALE.→LINEAL .'grandfather'
2 GENERATION

'male parent of parent of' = 'male second-generation ancestor'

Such definitions do not represent an ambiguity, but rather alternative conceptualizations of the same content (see p. 249 below).

Another effect of this rule is the desired one of providing single definitions of *ancestor* and *descendant*, in such a way as to show 'grandfather', etc., to be hyponyms of 'ancestor', and to show 'grandson', etc., to be hyponyms of 'descendant'. In fact, the definition of *ancestor* seems to vary somewhat from speaker to speaker. Some people would feel that an ancestor should at least be of the male sex (and therefore distinct from an ancestress); others feel that a person must at least be dead, before he can qualify for this exalted station. So two possible definitions are:

ancestor: { +MALE.→LINEAL.
−LIVE.→LINEAL.

It goes without saying that Rule (B) can be read not only from left to right, but (according to the mirror-image convention) from right to left. Thus it also provides us with a unitary definition of *descendant*: .←LINEAL.

If the sole purpose of Rule (B) were to permit unitary definitions of two relatively infrequent words of the English language, *ancestor* and *descendant*, its importance might not seem sufficient to merit the costliness of a special rule. But rule (B) is also necessary for the provision of a unitary definition of *cousin* (in its wider sense of any distant relation, viz. any relative remote by more than one degree of collaterality). All these, for example, are types of cousin:

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(a) .←PARENT..↔SIBLING..→PARENT 'first cousin'
'child of sibling of parent of...'

(b) { .←PARENT..←PARENT..↔SIBLING..→PARENT. / .←PARENT..↔SIBLING..→PARENT..→PARENT. } 'first cousin once removed'

(c) .←PARENT..←PARENT..↔SIBLING..→PARENT..→PARENT. 'second cousin'

(etc.)

But all these, and other types, can, thanks to Rule (B), now be subsumed in the single formula: .←LINEAL..↔SIBLING..→LINEAL.

The final problem that arises is how to define the notion of 'kinship' itself. A first approximation to a specification of the general relation 'is kin to' would be: .←LINEAL..→LINEAL. (i.e. 'is a descendant of one's ancestor'). But this definition has the same kind of flaw as the definition of *sibling* as. ←PARENT..→PARENT.: namely, it treats the irreflexive relation of kinship as if it were a reflexive relation, and so implies that I am my own kinsman. Therefore we require yet one further rule, parallel to Rule (A), to make clear that for x to be kin to y, x must be distinct from y:

Rule of Implication (C):

'x.←LINEAL..→LINEAL.y' entails 'x.↔KIN.y' (where $x \neq y$) i.e. 'x is a descendant of an ancestor of y' entails 'x is kin to y' (where $x \neq y$).

The rules just given (Rules of Implication (A)–(C)) bring a new dimension to semantic analysis, because they introduce the possibility of a *single meaning* (like 'first cousin') being specified in *different ways*. Both (p) and (q) are definitions of (*first*) *cousin*:

(p) .←PARENT..↔SIBLING..→PARENT.
(q) .←LINEAL ..↔SIBLING..→LINEAL.
1 GENERATION 1 GENERATION

Notice, however, that these definitions indicate not a double ambiguity, but a single content which is capable of being conceptualized in two different ways. We can see a kinship bond either in terms of individual parent and sibling relations (the atomic relations which make up the 'nuclear' family unit), or we can see it in terms of mathematical co-ordinates on the broad expanses of a family tree. Thus kinship may be regarded not as a single conceptual domain, but rather as a field in which different conceptual domains (different conceptualizations of the same content) overlap. Rules of implication such as Rules (A)–(C) seem

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to match up to psychological reality, in that the shortest formula (in terms of number of features) appears to represent the kind of conceptualization most appropriate to a given relationship. Thus the simplest definition of *nephew* (+MALE. ←PARENT.. ↔SIBLING.) is also the one which accords best with one's intuitive feeling of what such a relationship is, in contrast to the more cumbersome definition bringing in the question of ancestry:

+MALE..←LINEAL ..↔SIBLING.
1 GENERATION

Rules (A) to (C) above relate a detailed, atomic view of kinship by stages to a general, abstract view. The overlapping domains can be imagined as microscopes pointed at the same object, one focusing on a narrow range with stronger magnification, another focusing on a wider range with weaker magnification.

Rules of Implication

Rules of implication (or, as one might prefer to call them, 'semantic transformations') are needed for certain areas of meaning, such as kinship, where otherwise it would be impossible to provide a unitary, finite definition for a particular meaning. These rules are posited with reluctance, as they destroy the one-to-one relation of formulae to meanings which we should otherwise wish to preserve. But there seem to be many areas of lexical meaning where alternative conceptualizations are possible, and where therefore special rules of implication have to be set up. Apart from kinship, a simpler example of such semantic overlap is the relation between the two polarities 'warm'/'cool' and 'hot'/'cold'. Clearly the second opposition covers approximately the same area of meaning as the first, except that it represents a contrast of greater intensity. To convey this relationship between the two oppositions, special rules of implication would be required to explain such facts as the approximate synonymy of *The weather is hot* and *The weather is very warm*, also of *The weather is slightly hot* and *The weather is warm*. There is a similar overlap between the polarities 'like'/'dislike' and 'love'/'hate'.

Bi-directional rules of implication are, of course, rules of synonymy; and it might be asked whether Rules (A)–(C), and other rules of the same kind, would not best be formulated bi-directionally. My own mind is open on this matter, as I have yet to find enough convincing evidence in favour of one solution rather than another. There is one consideration which has led me to formulate these rules as uni-directional entailments in this chapter, but this consideration cannot be explained until we deal

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with the problem of the universality of kinship concepts – a subject to which we now return.

Kinship and Semantic Universals

The preceding componential-predicational analysis of English kinship semantics is like the purely componential analysis of Lounsbury's Senecan analysis in one respect: it can be seen as providing a bridge between the culturally very general, if not universal, categories of sex and parenthood involved in the 'nuclear family', and the culturally-relative factors of kinship classification which determine how generation seniority, collaterality, consanguinity, and other abstract variables of that kind are handled by a particular language. It is tempting to see the two oppositions of +MALE/−MALE and →PARENT/←PARENT with which we started the second analysis as strong universals, i.e. as semantic contrasts present in every language. But all such plausible generalizations seem to fall foul of counter-instances in anthropological literature.

Goodenough (1970: pp. 4–38) reports a number of cultures (e.g. the Nayar castes of South India) in which the nuclear family of parents and children has no place: and Lounsbury (1969) mentions cases of cultures where biologically one or the other parent is held to have only an incidental part in procreation. Therefore the abstraction 'parenthood' subsuming motherhood and fatherhood is at best only a near-universal (in the strong sense) of kinship semantics.

This brings us up against another anthropological debating point: how far should kinship relations be defined in terms of the biological primes of sex and procreation? How far, on the other hand, can they be regarded as purely social institutions? The analysis of English kinship usage given in this chapter provides for both 'biological' and 'social' views, if we identify the basic oppositions of 'sex' and 'parenthood' as biologically founded, and the derived relations of siblinghood, ancestry, and cousinship as definable in terms of rights, duties and other social rather than biological correlates. The rules of implication, then, have the effect of deriving the socially institutionalized superstructure of kinship from a core of biologically founded relations. It is appropriate that these rules should be formulated as uni-directional, rather than bi-directional entailments, to allow for cases where kinship relations exist in social terms (e.g. through adoption) without any underlying biological relation.

The rules of implication, so considered, become the means for stating differences between conceptualizations of kinship in different languages. For example, the 'parallel'/'cross' opposition in Seneca kinship

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terminology would have to be instituted through a rule roughly as follows:

Rule of implication (D):

(a) '*x* .←LINEAL ..→LINEAL . *y*' entails
α MALE γ GENERATION γ GENERATION α MALE
'*x*.↔PEER .*y*'
+PARALLEL

(b) '*x* .←LINEAL ..→LINEAL . *y*' entails
α MALE γ GENERATION γ GENERATION β MALE
'*x*.↔PEER .*y*'
−PARALLEL.

(where *x* may be identical to *y*)

Here use is made of a widely employed convention in linguistics: the Greek symbols α and β indicate variables ranging over the terms of an opposition. Thus α MALE ... α MALE represents matching features of sex; while α MALE ... β MALE indicates non-matching features. γ GENERATION ... γ GENERATION symbolizes a matching number of generations. The rule defines the notion of 'generation-peer' which is as crucial to the Senecan system as 'sibling' is to the English system. Specimen definitions run as follows:

1. *haʔnih* 'my father' +MALE.↔PEER ..→PARENT.
+PARALLEL

5. *khehsōʔneh* 'my niece' −MALE.←PARENT..↔PEER .−MALE
(female ego) −PARALLEL

9. *akyäːʔseːʔ* 'my cousin' .←PARENT..↔PEER .→PARENT.
−PARALLEL

Two comments on the interpretation of these definitions:

(a) The ↔PEER relation is reflexive as well as symmetrical, so *haʔnih* as defined above includes one's father in the narrow sense of 'male parent'.

(b) Recalling that the above, like all the preceding definitions of kinship terms, are simplified renderings of downgraded predications, we may define each 'elder sibling' or 'younger sibling' term by two separate downgraded predications: one relating ego to alter as regards kinship, and one relating them in terms of relative age. This overcomes what would be a problem if we tried to compress all of the meaning into one downgraded predication: how to get the 'older than'/'younger than' relation to stretch directly between ego and alter, while the 'sibling' relation links them only indirectly. Thus the meaning of *ahtsiʔ* 'elder sister' will be specified by three separate features, of which two are downgraded predications:

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−MALE
⟨X⟩
⟨Y⟩

(where X = 'who is child of parallel peer of parent of ego')

(where Y = 'who is older than ego')

We may assume that some of the derived relations introduced by implication rules (such as the 'sibling' rule Rule (A)) are widely applicable to different languages, and therefore that they can be treated as 'weak universals' in the sense of being language-neutral. Work by Lounsbury using his 'reduction rules' which are somewhat similar to the present rules of implication invites the conclusion that such rules are independent of given languages and cultures, and may form the basis for a general system of classification for kinship terminologies (Lounsbury 1964a, 1964b, 1965).

In comparison with colour semantics, the case for universals in kinship semantics is complicated by the cultural nature of the phenomenon studied. Talking about 'universal kinship categories' begs the question of whether there are *cultural* universals of kinship, that is, whether the cultural realities referred to by kinship terms remain constant from culture to culture. There is room for scepticism even on so fundamental an issue as whether the term 'kinship' refers to anything that can be characterized in a culturally neutral way. None the less, those who are philosophically inclined to a weak universalist position will find that it enables them to see a common basis in the obviously similar conceptualizations of kinship that arise in geographically and linguistically diverse environments.

Conclusion

After noting Chomsky's distinction between formal and substantive universals, we have seen that the second of these categories demands a further subdivision into 'strong universals' (characteristics common to every language) and 'weak universals' (language-neutral characteristics, belonging to a universal set from which each language takes a subset).

An instance of a 'weak universal' hypothesis is Berlin and Kay's hypothesis that there are eleven basic colour categories, which are conditionally ordered such that the presence of one category depends on the presence of certain other categories. 'Weak' is, however, a rather unfortunate description of this hypothesis, which makes strong predictions as to what is and what is not a possible set of basic colour categories for any human language. Two of Berlin and Kay's colour categories, 'black' and 'white', in fact qualify as strong universals. In

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kinship terminology, too, there are good (though not uncontested) arguments for taking up a weak universalist position which not only accepts the language-neutrality of such categories as parenthood, sex and marriage, but recognizes them as basic to kinship semantics in the vast majority of languages. The examples of colour and kinship suggest, therefore, that there is some merit in making the contrast between strong and weak universals as a matter of degree, rather than an all-or-nothing affair.

The rules of implication introduced in this chapter form a bridge between the universal and the culturally relative aspects of kinship semantics. I believe that such rules have an important place in semantic theory, and it is to a more detailed study of them that I shall turn in the next chapter.

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13. Semantic Equivalence and 'Deep Semantics'

Much earlier we made the assumption (p. 90) that conceptual equivalence, or synonymy, could be shown directly by a system of semantic representation, such that whenever two or more expressions were synonymous, they could be shown to have the same semantic representation. But this assumption proved to be too strong when, in the last chapter, it was found necessary to set up special rules to account for the semantic equivalence of one semantic representation to another. The introduction of these rules at that point may have seemed somewhat arbitrary – an improvised *deus ex machina* to get the semanticist out of difficult analytic problems in connection with kinship semantics. It will now be my aim to say more explicitly why we need such rules. I shall give a number of instances of implication rules, and will then speculate upon whether these rules provide evidence for a level of 'deep semantics' (p. 269) – a level of linguistic organization even more remote from the phonetic substance of language than is the level of semantic representation as so far considered. This exploration will eventually lead me to reinterpret rules of implication as 'semantic transformations'.

To clarify matters, let us begin with one or two definitions:

1. *A Rule of Implication* is a rule which specifies that for a given semantic formula it is possible to substitute another semantic formula. This means in effect that for any rule of implication A → B, the logical consequences derivable from the formula B are also applicable to any sentence expressing formula A. As in the last chapter, we consider such rules to be in theory uni-directional substitutions, although, in practice, most of the rules dealt with in this chapter are bi-directional, and can therefore be more fittingly formulated as 'A ↔ B' rather than 'A → B'. But this is an issue to which we return later.

2. *A Substantive Rule of Implication* is a rule of implication which makes mention of specific features (such as ←PARENT and ↔SIBLING).

3. *A Formal Rule of Implication* is one which makes no reference to specific semantic features, but rather states the equivalence of one generalized semantic tree-structure to another.

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The distinction between substantive and formal rules of implication parallels Chomsky's distinction between substantive and formal universals (p. 231). Whereas the rules of the last chapter were substantive rules, dealing with particular concepts such as 'siblinghood' and 'ancestry', the rules to be dealt with in this chapter will be formal.

To conclude these introductory remarks, a word of caution: this chapter is highly tentative, dealing with a subject which is largely unexplored territory as far as present-day linguistic semantics is concerned.

Why Rules of Implication are Needed

The motives which lead us to establish rules of semantic equivalence are the same as those which lead us to any hypothesis in semantic analysis. These are:

> *Firstly*, the need to extend the semantic accountability of a theory, by showing how it is possible to deduce the basic statements of an analysis (i.e. implications, inconsistencies, contradictions, tautologies, etc.) from the form of the semantic representation that that analysis assigns to utterances.
> *Secondly*, the need to preserve a general set of mapping procedures between semantic and syntactic structure (see pp. 183–202).

These principles may, of course, conflict; but in general, we try to preserve whatever generalizations can be made in both spheres.

It was the interaction of these two principles that led to the positing of Rules of Implication (A) to (C) in the last chapter: it was found that certain kinship meanings could be correctly represented (in terms of their basic statements, as always) only at the cost of abandoning the key postulate that a definition of a word can be specified in terms of a finite set of semantic features. That is, there was seen to be a conflict between two postulates that had up to that time been treated as well-established: the postulate of finite componential definition (pp. 13, 91) and the postulate of total accountability for basic statements (p. 73). In order to keep both of these intact, it was necessary to violate another postulate which had until then been tacitly adhered to: that there is a unique semantic representation for each meaning of a sentence. Why should this postulate have been considered more vulnerable than the other two? The answer must be that rules of implication are needed anyway: that far from being makeshift devices, they enable us to make generalizations about diverse phenomena which would otherwise have to be dealt with separately in an *ad hoc* way. The explanation of this answer, that is, is a positive

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demonstration that rules of implication are a valuable addition to semantic theory, and this is the task to which I now address myself.

The Rule of Subordination

The need for the *rule of subordination*, the first formal rule of implication to be considered, has already been anticipated in two previous chapters (pp. 147, 175). This is the rule that equates two semantic representations as follows:

$$(a \,.\, P\langle \text{the}' \,.\, Q \ldots\rangle \ldots)' \equiv ((a \,.\, P \ldots) \,.\, Q \ldots)$$

[NOTE: the ellipses (...) indicate that a second term is optional: i.e. both predications may be either one-place or two-place predications.]

The rule, which roughly speaking inverts the relation of inclusion between one predication and another, may be expressed in words as follows:

> If a main predication *X* contains within its predicate a modifying predication (p. 146) *Y*, then an otherwise equivalent formula in which *X* is subordinate to *Y* may be substituted for it.

The previous occasions on which this rule has appeared have provided two motivations for it. The first motivation is that of explaining the synonymy of sentence pairs such as *We slept for three hours* and *Our sleep lasted three hours* (pp. 146–7). The second is that of explaining why sentences such as (1) and (2) are ambiguous in a way that sentences (3) and (4) are not:

(1) All cats eat some bats.
(2) Some bats are eaten by all cats.
(3) Some cats eat some bats.
(4) Some bats are eaten by some cats.

The point, as already observed in Chapter 9 (pp. 174–5), is that when quantifiers are mixed (i.e. when **some** and **all** both quantify arguments of the same principal predication), the truth conditions vary according to whether the scope of **all** is included in that of **some**, or vice versa. But when two identical quantifiers co-occur, whether two **some**s or two **all**s, there is a coalescence of the two readings, and scope of quantifiers makes no difference. This coalescence (as in my earlier analysis of quantification) results from the operation of the rule of subordination; but the ambiguity of (1) and (2) shows that in the case of mixed quantification, the rule of subordination is overruled by the factor of scope.

There is another case where the rule of subordination helps to explain

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a coalescence of interpretations, and this involves the scope of negation. Notice that the negative sentence (6) contains an ambiguity which is absent from the corresponding positive sentence (5):

(5) He listens to you *on purpose*.
(6) He does*n't* listen to you *on purpose*.

If the negative of (6) applies to the whole of the sentence including the adverbial *on purpose*, the meaning is:

(6a) 'It is not true that he listens to you on purpose.'

and if, on the other hand, the adverbial is excluded from the scope of negation, the meaning is:

(6b) 'On purpose, he doesn't listen to you.'

Other examples of the same kind of ambiguity are:

He has*n't* been out of work *for a long time*.
I did*n't* marry Jane *because she owned several oil wells*.

The explanation of negation given earlier (p. 167) will not account for this ambiguity. Since every predication can be negated, by the addition of the negative operator **not**, once and once only, there should be a one-to-one correspondence between positive and negative readings. But we have now seen that, according to the rule of subordination, there are two ways of representing the meaning of an adverbial expression: it can either be a modifying (downgraded) predication, or it can be a higher predication, to which the principal predication is subordinated. For example, in (5) above, the adverbial *on purpose* is a realization either of the modifying predication ⟨**the'** . *Q* . *b*⟩ in (5a), or of the main predicate and argument *Q* . *b* in (5b):

(5a) (he . LISTENTO ⟨**the'** . *Q* . *b*⟩ . you)'
(5b) ((he . LISTENTO . you) . *Q* . *b*)

If, however, the principal predication 'He listens to you' is negated in (5a) and (5b), these formulae are no longer equivalent. If we define the scope of negation, as before, as the predication governed by **not**, then the adverbial will be included in the scope of negation in the case of (5a), but not in the case of (5b). Hence the negative counterparts of (5a) and (5b) represent readings (6a) and (6b) respectively.

The case of mixed quantification and the case of variable scope of negation are not unconnected, as is argued by the possibility of paraphrasing (1) and (2), through negation, as either:

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No cat eats no bats.
Not all bats are not eaten by all cats.

In both mixed quantification and variable scope of negation, we explain an asymmetrical ambiguity as an exception to the rule of subordination: and in each case, the rule is overridden because of a change in the scope of logical operators.

Rule of Identification

A second important formal rule of implication is the *rule of identification*, by which any predication, whether one-place or two-place, can be transformed into an equative predication.

Equative predications are predications which underlie such sentences as *My father is a doctor* or *Marco Polo is my favourite explorer*, where two noun phrases are linked by the verb *to be*. The semantic character of these sentences has not so far been discussed, but is clearly very similar to those of sentences with adjectival complement. Notice that although (7) has an adjectival complement and (8) has a nominal (equative) complement, (7) and (8) are synonymous:

(7) That gander is male.
(8) That gander is a male.

and notice also that the rule of tautology for one-place predications (p. 149), which explains why (7) expresses a tautology, also explains why (8) expresses a tautology. It looks, then, as if in spite of their syntactic difference, (7) and (8) express the same predication (gander: MALE), which is a one-place predication. The feature of present tense, here as in other case (p. 164), belongs to the predicate: (gander: MALE ⟨the′ . TIME . the NEAR⟩)′.

While it seems generally correct to analyse equative predications as one-place predications in this way, there are respects in which the second (complement) noun phrase behaves like other noun phrases, which, as we have seen elsewhere, express arguments rather than predicates. In particular, a noun phrase such as *a writer* in *Mandy is a writer* expresses the meaning of a relative clause, i.e. a qualifying predication:

(mandy: PERSON′ ⟨the′ . WRITE . ∅⟩)

And some predications, to which the term 'equative' most appropriately applies, contain two definite elements, such that the role of argument and predicate are minimally distinct, only features of tense and aspect distinguishing one from another: *My father is the doctor*. It is in fact

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possible for the argument and predicate here to switch roles, so that (9a) and (9b) are logically interchangeable (though thematically different):

(9a) 'My father is the doctor' ≡ (9b) 'The doctor is my father'.

For the purposes of the rule of identification, however, it is unnecessary to investigate further the peculiarities of equative predications. We can treat these predications as one-place predications, and can state the rule of identification, using the linear notation, as follows:

(10a) $(a.\ P\ldots) \equiv$ (10b) $(a' : \emptyset'\ \langle \text{the}' .\ P\ldots\rangle)$

Or verbally as follows:

Any predication X containing an argument a and a predicate P is equivalent to an equative predication in which a is the argument and the predicate consists of a downgraded (qualifying) predication which is identical to X except that **the** replaces a.

[NOTES: Again, in (10) the ellipsis (...) represents the optionality of a second argument. The symbol $\emptyset$ signifies that no feature is present in the predicate apart from the downgraded predication. Thus features of tense and aspect do not appear in the above formulation of the rule. Also omitted are other features which might accompany **the** in the coreferential argument: e.g. the feature of personhood distinguishing 'who' from 'which'. These omissions do not in general affect the equivalence of (10a) and (10b), since whatever features of tense, etc., are present in (10a) will also be in (10b).]

Among other things, the rule of identification can be used to show the semantic equivalence or quasi-equivalence of such pairs as:

(11) *Bert collects stamps* is synonymous with *Bert is a philatelist.*
(12) *Jim is employed by General Motors* is synonymous with *Jim is an employee of General Motors.*
(13) *Mabel loves music* is synonymous with *Mabel is a music-lover.*

Why cannot we show these equivalences directly by assigning to each matching pair of sentences the same semantic representation? The answer is that this would greatly complicate the relation between syntax and semantics. Consider just the following case:

	(bert . COLLECT .	stamps)	
(11a)	*Bert*	*collects*	*stamps*
	Subject	VP	Object

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(bert : [PERSON]′ ⟨the′ . COLLECT . stamps⟩)
(11b) *Bert is one who collects stamps*
(11c) *Bert is a stamp-collector*
(11d) *Bert is a philatelist*
Subject VP Complement

The Subject-VP-Object construction of (11a) matches straightforwardly with a two-place predication structure, whereas the synonymous Subject-VP-Complement construction of (11b–d) matches straightforwardly with a one-place predication (*is* having zero expression, as already noted). Furthermore, the relative clause in (11b) must be a realization, for good reasons discussed on p. 145, of a qualifying predication; and the nouns *stamp-collector* and *philatelist* exemplify the agentive type of noun definition (*Type A*) discussed on p. 209. Such regularities would have to be sacrificed if an attempt were made to map (11b–d) on to the simpler semantic representation of (11a). Bearing in mind that the synonymy of (11a) with (11b–d) has countless parallels in the language, it is better to account for them by one general rule – the rule of identification – than to introduce a number of irregularities into the syntax–semantics relationship.

The rule also shows the synonymy of sentence pairs like:

(14) Doctors can read.
(15) Doctors are literate.

Accepting the account of adjective definition on page 210, we define *literate* by a formula containing a downgraded predication:

⟨the′ . ABLETO . (the′ . READ . ∅)⟩ 'which is/are able to read'.

Thus the representations of (14) and (15) will differ as follows:

(14a)(doctors′ . ABLETO . (the′ . READ . ∅))
'Doctors can read'
(15a) (doctors : ∅′ ⟨the′ . ABLETO . (the′ . READ . ∅)⟩)
'Doctors are which-can-read'

By the rule of identification, these are equivalent.

More indirectly, the rule of identification may cooperate with the mirror-image convention to show the equivalence of:

(16) Mr Jones is William's teacher.
(16a) William is Mr Jones' pupil.

The demonstration or 'proof' of this equivalence runs as follows [where a = 'Mr Jones'; P = 'teach'; b = 'William']:

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(16) $= (a : \emptyset' \langle \text{the}'. \rightarrow P . b \rangle)$
(i.e. 'Mr-Jones (a) is-who-teaches-William')
$= (a . \rightarrow P . b)$ (by rule of identification)
(i.e. 'Mr-Jones (a) teaches ($\rightarrow P$) William (b)')
$= (b . \leftarrow P . a)$ (by mirror-image convention)
(i.e. 'William (b) is-taught-by ($\leftarrow P$) Mr-Jones (b)')
$= (b : \emptyset' \langle \text{the}' . \leftarrow P . a \rangle)$ (by rule of identification)
(i.e. 'William (b) is-who-is-taught-by-Mr-Jones')

The rule of identification is used twice here: substituting first from right to left, then from left to right. Terms like *teacher* and *pupil*, whose directional semantic contrast can be shown in this way, may be called *indirectly converse*. More complicated cases of indirect converseness can be exhibited only by repeated applications of the rule of identification and the mirror-image convention. An example of this kind is the semantic relation between *grandparent* and *grandchild*, whose definitions (it will be remembered from p. 243) involve two stages of downgrading:

grandparent: $\emptyset' \langle \text{the}' . \rightarrow \text{PARENT} . \emptyset'' \langle \text{the}'' . \rightarrow \text{PARENT} . \emptyset \rangle \rangle$
grandchild: $\emptyset' \langle \text{the}' . \leftarrow \text{PARENT} . \emptyset'' \langle \text{the}'' . \leftarrow \text{PARENT} . \emptyset \rangle \rangle$

Suppose we wish to show the synonymy of sentences (17) and (18):

(17) Henry VII was Queen Elizabeth's grandparent.
(18) Queen Elizabeth was Henry VII's grandchild.

The proof runs as follows ['Henry VII' = a; 'Queen Elizabeth' = b]:

(17) $= (a : \emptyset' \langle \text{the}' . \rightarrow \text{PARENT} . \emptyset'' \langle \text{the}'' . \rightarrow \text{PARENT} . b \rangle \rangle)$
(i.e. 'HVII (a) is-grandparent-of-Q.E.')
$= (a . \rightarrow \text{PARENT} . \emptyset' \langle \text{the}' . \rightarrow \text{PARENT} . b \rangle)$ (by rule of identification)
(i.e. 'HVII (a) is-parent-of parent-of-Q.E.')
$= (\emptyset' \langle \text{the}' . \rightarrow \text{PARENT} . b \rangle . \leftarrow \text{PARENT} . a)$ (by mirror-image convention)
(i.e. 'parent-of-Q.E. is-child-of HVII (a)')
$= (\emptyset' \langle \text{the}' . \rightarrow \text{PARENT} . b \rangle : \emptyset'' \langle \text{the}'' . \leftarrow \text{PARENT} . a \rangle)$ (by rule of identification)
(i.e. 'parent-of-Q.E. is-child-of-HVII')
$= (\emptyset'' \langle \text{the}'' . \leftarrow \text{PARENT} . a \rangle : \emptyset'' \langle \text{the}'' . \rightarrow \text{PARENT} . b \rangle)$ (by mirror-image convention)
(i.e. 'child-of-HVII is-parent-of-Q.E.')
$= (\emptyset'' \langle \text{the}'' . \leftarrow \text{PARENT} . a \rangle . \rightarrow \text{PARENT} . b)$ (by rule of identification)
(i.e. 'child-of-HVII is-parent-of Q.E. (b)')
$= (b . \leftarrow \text{PARENT} . \emptyset'' \langle \text{the}'' . \leftarrow \text{PARENT} . a \rangle)$ (by mirror-image convention)
(i.e. 'Q.E. (b) is-child-of child-of-HVII')
$= (b : \emptyset' . \langle \text{the}' . \leftarrow \text{PARENT} . \emptyset'' \langle \text{the}'' . \leftarrow \text{PARENT} . a \rangle \rangle)$ (by rule of identification)
(i.e. 'Q.E. (b) is-grandchild-of-HVII')
$= (18)$

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Notice that wherever the mirror-image convention is applied here, it effects a reversal in the ordering of the main predication only. This limitation of the convention ensures greater clarity and explicitness in the presentation of the proof, though a shorter proof could be devised if the mirror-image convention were applied simultaneously to both main and downgraded predications.

Yet another use of the rule of identification is to show the near-synonymy of so-called 'pseudo-cleft' sentences such as (19), and corresponding sentences of simpler construction, such as (20):

(19) What the car hit was a lamp-post.
(20) The car hit a lamp-post.

The nominal relative clause *What the car hit* (19) is semantically represented by an argument containing a qualifying predication:

the' ⟨**the'** . ←*P* . *a*⟩ 'that which the car hit'

Hence the following are semantic representations for (19) and (20):

(19) (**the'** ⟨**the'** . ←*P* . *a*⟩ : *b*)
(20) (*a* . →*P* . *b*)
[*a* = 'the car'; *b* = 'a lamp-post'; *P* = 'hit']

A slight difference of meaning between (19) and (20) comes from the presence of the initial feature of definiteness (**the**) in (19), telling us that the car hit some particular thing which is assumed to be known in the context. If we subtract this extra feature from (19), we end up with the formula

(19a) (∅' ⟨**the'** . ←*P* . *a*⟩ : *b*)

which can then be shown to be equivalent to (20) by the following steps:

(19a) = (*b* : ∅' ⟨**the'** . ←*P* . *a*⟩) (by mirror-image convention)
= (*b* . ←*P* . *a*) (by rule of identification)
= (*a* . →*P* . *b*) (by mirror-image convention)
= (20)

There are other cases of semantic equivalence which require for their demonstration not only the rule of identification, but the rule of subordination as well. Consider the following pairs:

{ (21a) The consul's anger was great
(21b) The consul was very angry

{ (22a) Stonehenge's age is unbelievable
(22b) Stonehenge is unbelievably old

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(23a) The boy's stupidity was unusual
(23b) The boy was unusually stupid

(24a) John's suffering was noticeable
(24b) John suffered noticeably

In each case we have the attribution of a quality to a person or object, and also an expression of the *extent* or *degree* to which that quality holds. In the second sentence of each pair, the extent is indicated adverbially (that is, in semantic terms, by a modifying predication). Thus an analysis of (21b) will be:

(21b) $(a : \uparrow\text{ANGRY}\langle\text{the}' . \rightarrow\text{EXTENT} . \uparrow\text{AMOUNT}\rangle)'$
'The consul was angry to a great extent' [a = 'the consul']

[NOTE: The polar feature ↑AMOUNT here I assume to be the same as that which occurs in the definitions of 'many' and 'much' as opposed to 'a few' and 'a little' (p. 172). 'Very' (= ⟨the′ . →EXTENT . ↑AMOUNT⟩) contrasts, in terms of this feature, with 'a little' (= ⟨the′ . →EXTENT . ↓AMOUNT⟩).]

Notice that this analysis (by the rule of entailment on p. 135) shows, as it should do, that (21b) entails 'The consul was angry'. In the first sentence of each pair, e.g. (21a), the predication of extent is the main predication, while the attribution of anger, etc., appears as a qualifying (downgraded) predication in its initial argument:

(21a) $(\text{the}' \langle\text{the}' . \leftarrow\text{EXTENT} . (a : \uparrow\text{ANGRY})\rangle : \uparrow\text{AMOUNT})$
'The extent to which the consul was angry was great.'

This analysis shows the abstract noun *anger* in (21a) to be an expression of extent, as in fact is indicated by the possibility of paraphrasing *the consul's anger* by *the extent to which the consul is/was angry* or *the extent of the consul's anger*.

Taking the above semantic representations of (21a) and (21b), we can show their near equivalence by a proof on the same lines as before. But first let us note that here again the synonymy is not quite exact, because of the initial feature of definiteness in (21a): (21a) assumes, where (21b) does not, that there is a given extent to which the consul was angry. We therefore subtract this feature, as in (19), and use (21ai) as our starting point (omitting, from now on, prime markings and external brackets):

(21ai) $\emptyset \langle\text{the} . \leftarrow\text{EXTENT} . (a : \uparrow\text{ANGRY})\rangle : \uparrow\text{AMOUNT}$
$= \uparrow\text{AMOUNT} : \emptyset \langle\text{the} . \leftarrow\text{EXTENT} . (a : \uparrow\text{ANGRY})\rangle$ (by mirror-image convention)
$= \uparrow\text{AMOUNT} . \leftarrow\text{EXTENT} . (a : \uparrow\text{ANGRY})$ (by rule of identification)
$= (a : \uparrow\text{ANGRY}) . \rightarrow\text{EXTENT} . \uparrow\text{AMOUNT}$ (by mirror-image convention).

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$= a$: ↑ANGRY⟨the . →EXTENT . ↑AMOUNT⟩ (by rule of subordination)
= (21b)

The proof works not only with adverbials of degree, as in (21–4), but also with some other types of adverbial expressions, e.g. manner adverbials:

(25) My uncle's walk was peculiar. (= 'The manner in which my uncle walked . . .')
(26) My uncle walked in a peculiar manner.

There is no difficulty in adapting the proof for (21) to account for the synonymy of (25) and (26), by substituting the adverbial relation →MANNER/←MANNER for that of →EXTENT/←EXTENT.

As a final example of the operation of the rules of identification and subordination, let us take the problem of demonstrating synonymy between comparative sentences such as:

(27) Paris is more beautiful than London.
(28) London is less beautiful than Paris.

The constructions *more . . . than X* and *less . . . than X* are parallel to intensifying adverbs like *very* in expressing degree or extent: consider, for example, the relatedness of (27) to *Paris is very beautiful*, *Paris is quite beautiful*, etc. Also, the relation between *more . . . than X* and *less . . . than X* is very similar to that between indirect converses like *grandparent* and *grandchild*. These two observations are incorporated into the semantic representation of comparative sentences as follows [a = 'Paris'; b = 'London']:

(27) a : OBEAUTIFOL⟨the . →EXTENT . ∅⟨the . →GREATER . the[1] ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩⟩⟩
('Paris is beautiful to an extent greater than the extent to which London is beautiful.')
(28) b : OBEAUTIFUL⟨the . →EXTENT . ∅⟨the . ←GREATER . the[1] ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩⟩⟩
('London is beautiful to an extent less than the extent to which Paris is beautiful.')

Before we proceed, two points about these representations need to be explained: first, the symbol OBEAUTIFUL indicates a neutralization of the polar opposition between ↑BEAUTIFUL 'beautiful' and ↓BEAUTIFUL 'ugly'. That is to say, in comparative constructions, as in 'How' questions and some other syntactic constructions, a polar dimension of meaning is specified without any indication of inclination towards one pole or the other. Notice, for example, that 'Welsh slag-heaps are more beautiful than English ones are' does not entail 'Welsh slag-heaps are beautiful'.

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Second, a feature of definiteness marked **the**[1] in both the formulae above once again mars the complete synonymy of the two sentences. The slight semantic difference between (27) and (28) resides in the assumption in (27) that the degree of beauty of London is known, and the opposite assumption in (28) that the degree of beauty of Paris is known. We therefore subtract these features from the formulae to make them completely synonymous before showing their equivalence:

(27) a : OBEAUTIFUL ⟨the . →EXTENT . ∅ ⟨the . →GREATER . ∅ ⟨the . ←EXTENT (b : OBEAUTIFUL)⟩⟩⟩ [1]

= (a : OBEAUTIFUL) . →EXTENT . ∅ ⟨the . →GREATER . ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩⟩ (by rule of subordination) [2]

= ∅ ⟨the . →GREATER . ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩⟩ . ←EXTENT . (a : OBEAUTIFUL) (by mirror-image convention) [3]

= ∅ ⟨the . →GREATER . ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩⟩ : ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩ (by rule of identification) [4]

= ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩ : ∅ ⟨the . →GREATER . ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩ (by mirror-image convention) [5]

= ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩ . →GREATER . ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩ (by rule of identification) [6]

= ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩ . ←GREATER . ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩ (by mirror-image convention) [7]

= ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩ : ∅ ⟨the . ←GREATER . ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩⟩ (by rule of identification) [8]

= ∅ ⟨the . ←GREATER . ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩⟩ : ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩ (by mirror-image convention) [9]

= ∅ ⟨the . ←GREATER . ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩⟩ . ←EXTENT . (b : OBEAUTIFUL) (by rule of identification) [10]

= (b : OBEAUTIFUL) . →EXTENT . ∅ ⟨the . ←GREATER . ∅ ⟨the . ←EXTENT . (a : OBEAUTIFUL)⟩⟩ (by mirror-image convention) [11]

= b : OBEAUTIFUL ⟨the . →EXTENT . ∅ ⟨the . ←GREATER . ∅ ⟨the . ←EXTENT . (b : OBEAUTIFUL)⟩⟩⟩ (by rule of subordination) [12]

= (28).

In the course of this proof we show in passing the near-synonymy of (27) and (28) to both of the following:

(27a) The beauty of Paris is greater than the beauty of London (i.e. 'The extent to which Paris is beautiful . . .')

(28a) The beauty of London is less than the beauty of Paris

These two sentences are respectively syntactic realizations (again discounting extra features of definiteness) of formulae [5] and [8], two midway stages of the proof.

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Enough illustrations have been given of the different applications of the rules of subordination and identification. These rules can now be seen to be not merely *ad hoc* equations, but quite powerful devices for accounting for varied and apparently unrelated cases of synonymy.

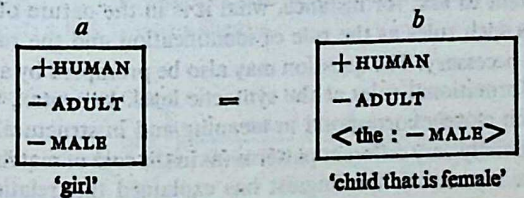
Other Formal Rules of Implication

Of other formal rules of implication, I shall briefly mention two which are somewhat different from the ones just dealt with, in that they state an equivalence between two arguments *a* and *b* rather than between two predications. (All the same, these rules may indirectly show equivalence between two predications *X* and *Y* which differ only in containing *a* and *b* respectively.)

The first of these rules we have already met under the title of the *rule of coreference*. It was introduced when the definite operator was being discussed (p. 163), but we can now see it as fitting into the category of formal rules of implication. It is this rule that states that if an argument *a* contains the definite operator (**the**) coreferring to another argument *b*, then the content of *b* may be substituted for **the** in *a* without change of meaning. Hence the equivalence of (29) to sentence (30b) in the two-sentence sequence (30):

(29) I met your sister at the concert last week.
(30a) I know your sister'. (30b) I met her' at the concert last week.

The second rule is the *rule of attribution*, which equates a component with a downgraded one-place predication in which that component constitutes the predicate. Thus for any argument *a* containing a feature F^i, this rule permits the substitution of an argument *b* in every way identical to *a*, except that F^i is replaced by $\langle$**the** : $F^i\rangle$. For instance:



By reapplying the rule, we can of course end up with a set of features which are all downgraded predications:

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c

$$= \begin{bmatrix} +\text{HUMAN} \\ \langle \text{the} : -\text{ADULT} \rangle \\ \langle \text{the} : -\text{MALE} \rangle \end{bmatrix}$$

'human-being who is non-adult (and) who is female'

d

$$= \begin{bmatrix} \langle \text{the} : +\text{HUMAN} \rangle \\ \langle \text{the} : -\text{ADULT} \rangle \\ \langle \text{the} : -\text{MALE} \rangle \end{bmatrix}$$

'who is human (and) who is non-adult (and) who is female'

[NOTE: These formulae do not indicate the scope of coreference of the, which may be taken to be the whole of the argument except for the downgraded predication in which the occurs.]

If reapplied exhaustively, the rule of attribution will have the effect of reducing componential analysis to predicational analysis, at least, as far as arguments are concerned; and one might consider, in fact, whether the rule should not be extended to predicates also, in which case componential formulae as we have understood them up to now could come to be regarded simply as notational abbreviations for formulae consisting of downgraded predications. Although the implications of this are by no means trivial, for the present purpose I shall regard the rule of attribution as a formal rule of implication in the same sense as the other rules considered here, and will use it at this point simply as a means of pointing out the synonymy of expressions like:

man – male human being who is adult
stewardess – person who is female (and) who looks after passengers
sage – person who is old (and) who is wise.

Is There a 'Deep Semantic' Structure?

The question which arises now is whether the above formulation of these rules is the best, or whether some other formulation might be superior. We may want to ask, for instance, what it is in the nature of language that makes such rules as the rule of identification and the rule of subordination necessary. The question may also be prompted by an analogy with transformational rules at the syntactic level. In syntax, when sentences which closely correspond in meaning and in structural relations have superficially very different patterns (as in the case of matching active and passive sentences), the linguist has explained this relationship by reference to an 'underlying structure' which is all but identical for the two sentences. Thus both the sentences *Cats eat bats* and *Bats are eaten by cats* will be seen, within transformational grammar, as deriving from

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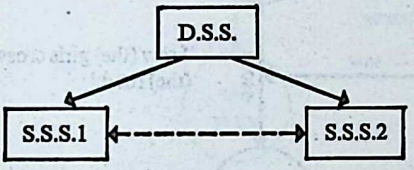
a 'deep structure' of approximately the same form. It is the role of the passive transformation to reorder the elements so as to produce the overt differences of order, verb form, etc., between the two.

A similar solution might be suggested for the correspondence between equivalent semantic representations on the semantic level. That is, if two semantic representations stand for the same meaning, then perhaps at a 'deeper' level these should be shown to have the same representation:

(D.S.S. = deep semantic structure)
(S.S.S. = surface semantic structure)

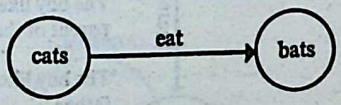


The broken horizontal arrow in this diagram represents the equating function of the rules we have been dealing with in this chapter; the diagonal arrows, which trace the uni-directional derivation of the two S.S.S.s from a single D.S.S., would be an alternative way of explaining equivalences between two different semantic representations.

At this stage I shall postpone discussion of the motivation for the 'deep semantic structure hypothesis', and shall briefly describe what deep semantic representations might be like. Let us think of 'deep semantics' not in dependency-structure terms at all, but in terms of networks (technically known as *graphs*) consisting of branches with 'links' and 'termini'.

(1) Let us suppose that every two-place (relational) predication is symbolized on this deeper level by a branch consisting of two termini connected by a link (where a circle represents a terminus, and an arrow represents a link between them):

(I)



(2) Let us suppose that every one-place predication is represented in the same way, except that the link has a terminus at one end only:

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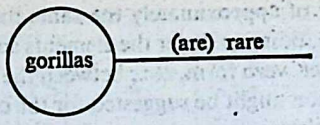
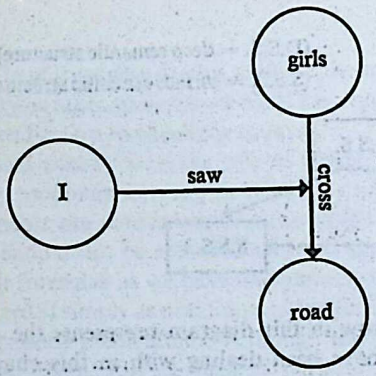
(II)



(3) Let us now say that if a predication is subordinate to another, in 'deep' semantics this means that a branch is joined to another branch in the shape of a 'T', thereby acting as a terminus to the other branch:

(III)

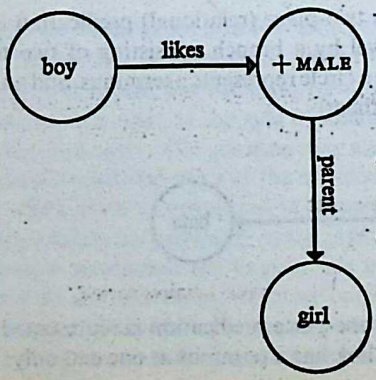


'I saw (the) girls cross (the) road.'

In this system, it will be noted, arguments are represented by circles; the terms of predicates are interpreted as termini (or ending-points of branches); predicates are interpreted as links (= straight lines in the diagrams); and a branch is defined as a link together with any terminus which is not itself a link (i.e. 'I saw' in (III) is one branch, and 'girls cross road' is another branch).

(4) Where there is a qualifying predication, i.e. a downgraded predication within an argument of another predication, this can in 'deep semantics' be interpreted as two branches sharing the same terminus:

(IV)



'The boy likes the male parent of the girl.' i.e.

'The boy likes the girl's father.'

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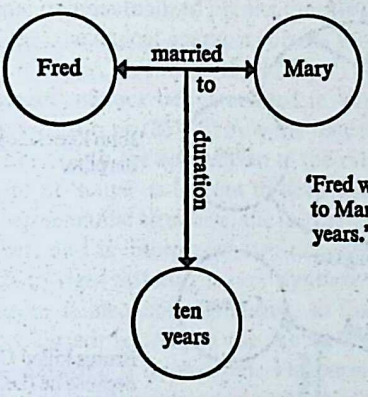
(5) A modifying predication, i.e. a downgraded predication within predicate, becomes in 'deep semantics' a branch with another branch (= the main predication) as its terminus:

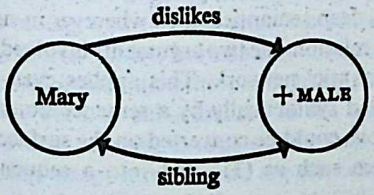
(V)



'Fred was married to Mary for ten years.'

(6) Coreference does not exist on this deepest level of semantics – instead, the referential identity of two arguments is shown directly in their having a single terminus as their source. Hence it is possible, and in fact common, for a deep semantic representation to form at some point a closed network:

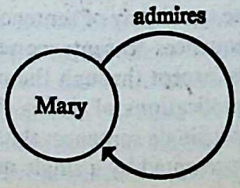
(VI)



'Mary dislikes her brother.'

The simplest case of a closed network would be a reflexive relation, where one link begins and ends with the same terminus:

(VII)



'Mary admires herself.'

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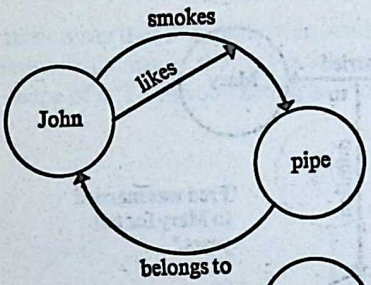
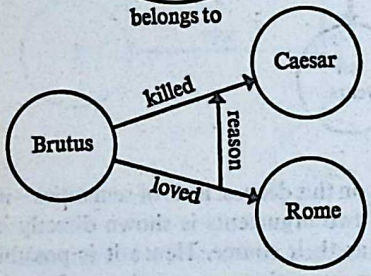
More complicated networks are easily constructed by combinations of these principles:

(VIII)



'John likes smoking his pipe.'

(IX)



'Brutus killed Caesar because he (i.e. Brutus) loved Rome.'

[NOTE: All these network diagrams omit the time relations expressed by the tense of the verb, and are to that extent simplified.]

If coreference is excluded from deep semantics, then wherever in surface semantics there is a coreference relation, the two arguments involved must be part of the same 'deep semantic' network. This applies even when the two arguments are separated syntactically by a sentence boundary. For example, network (IX) above could be converted on the surface level not only into a single sentence such as (31), but into a sequence of sentences such as (32) or (33):

(31) Brutus killed Caesar because he loved Rome.
(32) Brutus killed Caesar. This was because he loved Rome.
(33) Brutus loved Rome. For this reason he killed Caesar.

Thus deep semantics directly shows the synonymy of sentence-sequences to single sentences, or of sentence-sequences to sentence-sequences, in a way impossible in surface semantics, except through the operation of the rule of coreference. One of the implications of this is that the unit of deep semantics need not be merely a single sentence: the meaning of a whole group of sentences may be represented by a single network. But

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while in this direction deep semantics enlarges the scope of semantic theory, in another direction it limits it: deep semantics as just described must be on the level of 'pre-logical thought', for one can scarcely talk about the 'truth' or 'falsehood' of a network. The rules of implication tend to operate on unactualized predication structures, and (with the one exception of the) the logical operators do not play a part in them. Indeed, the concept of scope, on which the interpretation of logical operators crucially depends, cannot be formulated in terms of networks, and we have already seen (on pp. 257–8) how the scope of negation and quantification interferes with the application of the rule of subordination.

The concept of 'scope' is foreign to deep semantics for the following reason. In deep semantic structure, the mirror-image convention is taken a stage further, and is interpreted two-dimensionally. While in surface semantics left-to-right ordering is non-significant, in deep semantics top-to-bottom order is also non-significant, so that whichever way round a network is charted, so long as the same configuration of branches is retained, the network is unchanged. This absence of ordering in deep semantics (except for distinctions of order intrinsic to relations and indicated by arrows) is not difficult to accept if we think of surface and deep semantics as stages of linguistic representation getting progressively further away from the requirement of sequential expression which conditions the phonological and surface syntactic levels of organization, and nearer to being a copy of the structure of events and circumstances we recognize in the reality around us. In deep semantics the sentence *I saw the girls cross the street* is simply a junction of two interacting events – the seeing, and the crossing. But syntax makes us order these events in two ways: (a) by 'horizontally' ordering them such that one event is expressed before the other; and (b) by 'vertically' ordering them so that the one event is subordinated to the other. In surface semantics, only the vertical ordering is retained; in deep semantics, even this concept of ordering disappears, and we are left with networks free of all extrinsic ordering. Such networks form a plausible model of how, at least in part, our knowledge of the world around us is stored and utilized in the human mind.

We now have, then, a brief outline of a possible theory of deep semantics. The question is: what reasons are there for postulating the existence of such a level of semantic organization? One reason that *cannot* be given is the usual one of explaining basic statements of entailment, synonymy, etc.: the truth-based approach to meaning which takes as its goal the prediction of basic statements cannot, I have argued, apply to deep semantics. The arguments on behalf of deep semantics must rather be that it simplifies the explanation of language within a larger

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framework, providing explanations for characteristics of language which would otherwise appear gratuitous.

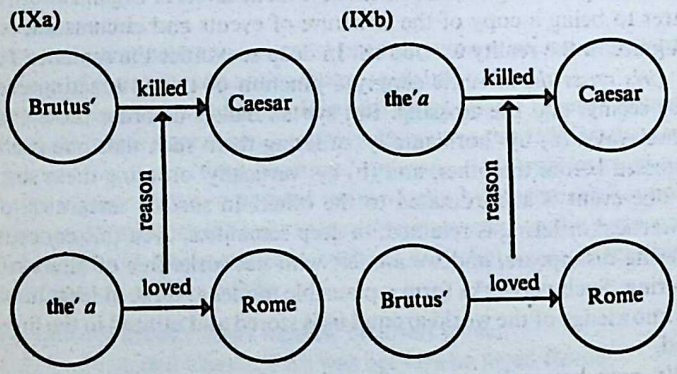
For example, the single network (IX) can be shown, by suitable formulation of the rules of subordination and identification, to underlie all three of the following propositions, which on the surface semantic level, as we have seen, would require three different tree structures:

(31a) (brutus' . →KILL ⟨THE″ . ←REASON . (the′ *a* . →LOVE . rome)⟩ . caesar)″
'Brutus killed Caesar because he loved Rome'

(31b) ((brutus' . →LOVE . rome) . →REASON . (the′ *a* . →KILL . caesar))
'Brutus loved Rome, so he killed Caesar'

(31c) ((brutus' . →LOVE . rome) : the″ ⟨the″ . →REASON . (the′ *a* . →KILL . caesar)⟩) 'Brutus's love of Rome was the reason for his killing Caesar'.

If we rethink the rules of subordination, identification, and coreference so as to make them 'semantic transformations', or uni-directional rules converting deep semantic representations into surface semantic representations, it then becomes possible to assign to each of the rules a particular function. The function of the *rule of coreference* is to copy what is referentially the same argument in different places in the network, and so to convert closed networks such as (VI)–(IX) into open networks. Network (IX) can thus become either (IXa) or (IXb):



The *rule of subordination*'s function is to pick a particular branch of the network to be the main predication, and so to assign a hierarchical ordering to predications (i.e. a 'vertical' ordering of inclusion). Diagrams (III) and (V) above show that whenever we have a T-shaped junction in a network, this can be interpreted in dependency structure either (by laying the T on its side) as a subordinating of the horizontal to the vertical, or (by standing the T upright) as a downgrading of the vertical in respect

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of the horizontal. These alternatives are the two formulae equated by the rule of subordination as stated earlier. As diagrams (IXa) and (IXb) are H-shaped diagrams incorporating two T-junctions, it is easy to see how they can be transformed into (31a) and (31b) respectively, according to which branch is selected to be the main predication.

We come now to the *rule of identification*. In deep semantic networks, chains of relations such as these may occur:

$$a \xrightarrow{P} b \xrightarrow{Q} c \xrightarrow{R} d \ldots\ldots$$

But in the dependency structures of surface semantics, one member of the chain alone can become the main predication, and the others have to become downgraded predications within one or other of its arguments. Therefore, two alternative ways of representing the above chain of relations are:

$(a \,.\, \rightarrow P \,.\, b' \,\langle \textbf{the}' \,.\, \rightarrow Q \,.\, c'' \,\langle \textbf{the}'' \,.\, \rightarrow R \,.\, d\rangle\rangle\rangle$
$(d \,.\, \leftarrow R \,.\, c' \,\langle \textbf{the}' \,.\, \leftarrow Q \,.\, b'' \,\langle \textbf{the}'' \,.\, \leftarrow P \,.\, a\rangle\rangle\rangle$

The effect of the rule of identification is to account for the equivalence ('indirect converseness') of these formulae. Thus here again, a rule of implication turns out to make good sense as a rule for converting networks into a form suitable for predication analysis.

Apart from suggesting an explanation of why rules of implication are necessary to the functioning of language, the 'deep semantics hypothesis' accounts for another hitherto arbitrary-seeming characteristic of semantic representations. This is the principle that every downgraded predication is linked by coreference to the main predication of which it is a part. Now that we have seen the deep semantic configurations which underlie downgraded predications, we can understand why such a link of coreference is necessary: if downgrading is a predicational reinterpreting of the junction between two branches of a network, then it can only represent that junction, or structural interlocking, by means of coreference, since there is no direct way in which a main predication can share the structure of a downgraded predication.

Finally, the 'deep semantics hypothesis' enables us to see a parallel between semantics and syntax: just as deep semantic networks are transformed into surface semantic tree-structure representations, so (it was suggested in Chapter 10) syntactic representations are converted into 'surface syntactic' structures for the linear presentation of the message so that emphasis and information focus may be effectively placed. In between the two sets of transformations we have rules (pp. 197–202) for mapping semantic representations onto syntactic representations. For

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each stratum of linguistic organization, there are certain functions which make that stratum an important stage in the overall mediating process which connects sound to meaning or meaning to sound.

All these arguments in favour of deep semantics are informal, and establish no more than a basis for looking with some degree of seriousness at what must remain a speculative hypothesis. The main attraction of this hypothesis is its ability to indicate why certain complexities of language are not arbitrary, but are an integral part of the way language has to operate as a multi-level coding system.

Conclusions

My main conclusions from this chapter are:

1. In natural language, semantic equivalence or synonymy cannot always be shown directly, by tracing two sentences back to the same underlying semantic representation. Instead, synonymy has to be shown indirectly by what I have called rules of implication.

2. Certain rules of implication (e.g. the rule of subordination and the rule of identification) can be shown to be highly motivated by their ability to account for apparently unrelated cases of synonymy which would otherwise have to be explained by separate statements.

3. Rules of implication can be speculatively reinterpreted as 'semantic transformations' mapping deep semantic representations on to surface semantic representations.

4. The deep semantic representations so postulated are viewed as relational networks, not as dependency-structure trees.

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14. Presuppositions

This chapter is in the nature of a quest: a quest for an explanation for the concept of PRESUPPOSITION. This elusive concept has been much discussed in both philosophy and linguistics, and many rival theories, definitions, and explanations of it have been entertained. Presupposition is something which a book on semantics cannot afford to ignore, because it raises problems fundamental to the subject. In particular, it raises the problem of how to interpret the relation between semantics and pragmatics – between meaning and use – with which we shall be more directly concerned in Chapter 16.

Entailment, Presupposition, and Implicature

To deal with presupposition properly, it is necessary to distinguish it from two types of relation which bear a family resemblance to it:

(1) *X* ENTAILS *Y*
X: 'He married a blonde heiress.'
Y: 'He married a blonde.'

(2) *X* PRESUPPOSES *Y*
X: 'The girl he married was an heiress.'
Y: 'He married a girl.'

(3) *X* IMPLICATES *Y*
X: 'Few men marry blonde heiresses.'
Y: 'Some men marry blonde heiresses.'

Of all these three relations, we might reasonably say 'From *X* I conclude that *Y*': in this general sense, they are all relations of implication. The first is the logical or semantic relation of *entailment*, which has been extensively discussed in earlier chapters; the second is the relation of *presupposition*, which has already been mentioned here and there, but will now form the major topic of this chapter; and the third is a weaker relation which has come to be known as *implicature*, and which will be given further attention in Chapter 16.

In all three cases it seems to be the meaning-relation between the propositions that primarily determines the implication: in this respect, these relations are different from the case of 'factual implication' discussed on p. 75, where the inference of *X* from *Y* was attributable to

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factual knowledge. But there is a difference in the degree to which pragmatics is involved. Entailment is fairly centrally a semantic relation – what we may call 'logical implication' – although, as indicated on pp. 155–6, even here pragmatics enters into the picture: without, for example, the pragmatic assumption in (1) of coreference between the 'He' of *X* and 'He' of *Y*, the entailment relation could not be said to exist between these two propositions. Implicature, on the other hand, is generally understood to be a relation of pragmatic implication, defined in terms of the speaker's and hearer's assumptions and beliefs. This clearly is not to say that the conceptual meaning of the propositions *X* and *Y* is irrelevant in the case of implicature – on the contrary, in pragmatics generally, it is assumed that the way a person uses and interprets utterances in speech situations depends crucially on his ability to understand their sense. This applies also to implicature, in a way that will become clearer later (see pp. 295–8, 331–4).

Presupposition is a problematic category because it seems to lie somewhere between the other two. In fact, there are two rival theoretical approaches to presupposition – a *logical* theory which treats presupposition as a relation between propositions, defined in terms of their truth and falsehood; and a *pragmatic* theory which treats presupposition as a question of the status of a speech act in relation to the speaker's or hearer's beliefs. I shall in fact argue (as others, such as Gazdar, 1979, have) for an in-between position, i.e. for a mixed *logical and pragmatic* account of presupposition. But first, in order to see what such an in-between position will mean, let us examine the rival logical and pragmatic concepts of presupposition.

Logical Presupposition

Before considering different views of presupposition at all, it will be useful to have in our heads some pre-theoretical idea of what the term means. We might say, returning to examples (1) and (2), that presupposition differs from entailment in that in some sense the truth of *Y* is taken for granted in the uttering of *X*. In terms of truth value, this difference might be captured by the following definitions:

X ENTAILS *Y* means that
- (a) if *X* is true, *Y* has to be true
- (b) if *X* is false, *Y* can be either true or false

X PRESUPPOSES *Y* means that
- (a) if *X* is true, *Y* has to be true
- (b) if *X* is false, *Y* has to be true.

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[NOTE: These definitions differ in the letter, but not in substance, from those given on page 74. There I defined entailment as a symmetric relation; here I define it as an asymmetric relation, making the comparison with presupposition more direct. It is only with entailment as an asymmetric relation that the problem of distinguishing entailment and presupposition arises.]

Although these are not exhaustive definitions, they provide us with a *negation test* – one that is often treated as crucial – for distinguishing presupposition from entailment. If one negates an entailing proposition *X*, the implication no longer obtains; but if one negates a presupposing proposition *X*, the implication still holds good:

(1a) 'He married a blonde heiress' entails 'He married a blonde'.
(1b) 'He did not marry a blonde heiress' does not entail 'He married a blonde'.

(2a) 'The blonde he married was an heiress' presupposes 'He married a blonde'.
(2b) 'The blonde he married was not an heiress' presupposes 'He married a blonde'.

The negation test shows, as we see, that entailment is 'vulnerable to negation', whereas presupposition is not.

But now let us turn to what these two relations have in common: in contrast to implicature, both entailment and presupposition satisfy a *conjunction* test, by which I mean that if one conjoins *X* with the negation of its entailment or presupposition *Y*, the result is an absurdity:

*He didn't marry a blonde, but he married a blonde heiress.
*He didn't marry (a girl), but the girl he married was a blonde.

These sentences are both bizarre, but for different reasons: the first results from the denial of an entailment, and the second from the denial of a presupposition.

But implicatures are weaker than entailments and presuppositions: they do not satisfy the conjunction test. George Lakoff (1970, pp. 32–4) gives the following examples:

'Few girls are coming.' → 'Some girls are coming.'
'If the F.B.I. were tapping my phone, I'd be paranoid.' → 'I am not paranoid.'

Lakoff refers to the relation symbolized by the arrow as 'presupposition', but, as he himself points out, the 'presupposition' may be cancelled out by a conjoined 'qualifying' statement:

'Few girls are coming, *or maybe none at all are*.'

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'If the F.B.I. were tapping my phone, I'd be paranoid, *but then I am anyway*.'

It is for this reason that I refer to these examples as implicatures, as distinct from presuppositions. With implicature, the truth of *Y* follows from *X* only so long as there is nothing in the context to cancel out or contradict this supposition.

Logical versus Pragmatic Presupposition

The two tests I have illustrated, the negation test and the conjunction test, distinguish logical presupposition on the one hand from entailment, and on the other from implicature. If a relation of implication passes both these tests, we can say it is a case of presupposition. Thus far, then, the logical definition of presupposition seems quite clear and straightforward. But there are two difficulties raised by this definition: difficulties which point in the direction of a pragmatic explanation of presupposition.

The first difficulty concerns the '*X*' of '*X* presupposes *Y*'. The logical theory assumes that as with entailment, so with presupposition, *X* and *Y* are propositions. If they were not propositions, presupposition could not be defined in terms of truth-value conditions. But this is an unfortunate limitation, since the relation between *X* and *Y* intuitively seems to be much the same, whether *X* is a proposition or some other kind of semantic entity:

(4) The book you stole from the library is valuable. (PROPOSITION)
(5) The book you stole from the library is not valuable. (NEGATIVE PROPOSITION)
(6) Is the book you stole from the library valuable? (*YES–NO* QUESTION)
(7) When did you steal the book from the library? (*WH*–QUESTION)
(8) See that you return the book you stole from the library. (COMMAND)
(9) What an interesting book you stole from the library! (EXCLAMATION)

Although only (4) and (5) are propositions, all these carry the presupposition 'You stole a book from the library' – or at least they do if we take *presupposition* in a broad and readily interpretable sense of 'the speaker of *X* purports to take for granted the truth of *Y*'. It would be very artificial, in particular, to separate (6) from (4) and (5), and to say that only the former two, as propositions, have presuppositions – the view we have to take if we restrict presupposition to its logical sense.

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What I have just described, however, as 'a broad and readily interpretable sense' of *presupposition* is in fact a first attempt at a pragmatic definition. A pragmatic conception of presupposition is person-oriented as well as language-oriented; we can express it in the following way, treating presupposition as a trivalent, rather than a bivalent concept: 'A speaker *s*, by virtue of uttering *X*, presupposes that *Y*'. This formulation on the one hand avoids defining presupposition as a purely logical relation between *X* and *Y*, and, just as important, on the other hand – avoids defining it as a relation of 'propositional attitude' between a speaker and a proposition. What a speaker believes in the privacy of his own mind is not at issue: what matters is what he *purports* to believe publicly by virtue of what he says. Take the well-known catch-question 'When did you stop beating your wife?' We may validly claim that the asker of this question presupposes that 'The hearer used to beat his wife', without claiming that the asker necessarily believes what he presupposes. So in pragmatics, as in semantics, one is concerned with what is publicly interpretable, not with the secret intentions or assumptions of the speaker.

If it can be formalized, then, a pragmatic theory of presupposition promises to account for a larger range of phenomena than the logical theory. But there is a second difficulty with the notion of logical presupposition. Our logical definitions of entailment and presupposition above are not exhaustive. Since the truth-values of *X* and of *Y* may in principle be independently varied, a fully specified definition of each would involve four conditions; i.e. four statements beginning 'If *X* is true ...', 'If *X* is false ...', 'If *Y* is true ...' and 'If *Y* is false ...' (although in fact the second two conditions can be deduced from the first two). Such definitions can be conveniently presented in a table, the 'if ... then' relation being symbolized by an arrow ⟶ :

X entails Y		*X presupposes Y*	
X	*Y*	*X*	*Y*
True ⟶	True	True ⟶	True
False ⟶	(True OR False)	False ⟶	True
(True OR False) ⟵	True	(True OR False) ⟵	True
False ⟵	False	? ⟵	False

The difficulty is located by the query in the last row of the definition of presupposition. If the presupposition *Y* is false, what can we say about the presupposing proposition *X*? For instance, if it happens to be untrue (as we all know) that 'New York has a king', do we say that

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'The king of New York is ill' is (a) false, or (b) neither true nor false? The first answer amounts to saying that there is no difference between presupposition and entailment: if we change the fourth line of the presupposition table to 'False ⟵ False', then for consistency we must change the second line to 'False ⟶ (True OR False)', and the two tables become indistinguishable. The second answer 'Neither True nor False' is in fact the only consistent answer we can give, and amounts to saying that 'The king of New York is ill' does not have a truth-value. But this is an unsatisfactory conclusion in itself, in that if *X* is a proposition it *must*, according to standard two-value logic, be either true or false. The only obvious alternatives are either (i) to abandon two-value logic altogether (a course which has been tried by some, but which is often felt to create more problems than it solves), or (ii) to deny that 'The king of New York is ill' is a proposition at all. The second answer is, again, not a solution, but another problem. If the *X* in '*X* presupposes *Y*' is not a proposition (although it has the overt syntactic form of a proposition) what can it be?

Here once more the path leads towards pragmatics: in particular towards that part of pragmatics which deals with speech acts and illocutionary force (see p. 321). A way out of the dilemma about truth-value is to argue that the *truth-value gap* arises because certain conditions have to be satisfied before anyone can 'successfully' or 'validly' assert a proposition. Notably, we cannot validly assert a proposition about something which does not exist, like the king of New York. For if the king of New York does not exist, the question of whether he is well or ill (and hence of whether the presupposing *X* is true or false) just does not arise. By this kind of argument, the presupposition failure becomes a failure of one of the preconditions for the appropriate performance of the speech act of assertion; and if no proposition is asserted, then the problem of a proposition without a truth-value is avoided.

The Predictability of Presuppositions from Semantic Representations

I have indicated, then, two of the reasons which point to a pragmatic account of presupposition. But before we look more carefully at pragmatic presupposition, let us pause to consider what a theory of presuppositions should accomplish. If presupposition is considered to be a logical relation (as on p. 74), there is good reason to list statements of the form '*X* presupposes *Y*' among the categories of basic statements which a semantic theory has to predict. In such a case, a theory of presupposition is merely a sub-theory of a semantic theory: viz. it is that part of a semantic theory which contains the rules for deriving pre-

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supposition-statements from semantic representations. If on the other hand presupposition is regarded, like implicature, as a pragmatic relation, then a theory of presupposition has to specify – by means of whatever rules and general conditions may be necessary – the circumstances under which a given speaker *s* by virtue of saying *X* presupposes that *Y*. But even under this pragmatic interpretation, it is clear that presupposition depends to a great extent on the conceptual content of *X* and *Y*. In fact, from semantic representations one can predict relations which we may call POTENTIAL PRESUPPOSITION, which will be signalled, in this section, by the arrow ⟶ . There is no way in which a theory of presupposition can ignore semantics. We may go further, and say that its ability to contribute to a theory of pragmatic presupposition is one of the criteria for evaluating a semantic theory. This follows from the discussion of the goals of semantics on pp. 86–7, where it was argued that a semantic theory is evaluated not only in terms of its explanation of basic statements, but in terms of its explanation of the relations of semantics to syntax on the one hand and to pragmatics on the other.

With this preparation, we may now ask how can potential presuppositions be predicted from the form of semantic representations? From the examples given so far, we note a certain parallel between entailment and presupposition. In the case of entailment, it has been noted earlier (p. 135) that a relation '*X* entails *Y*' can be largely predicted from a relation of semantic inclusion between *X* and *Y*; for example, between 'Betty is drinking milk' and 'Betty is drinking'. There is a similar relation of semantic inclusion in the cases of presupposition we have looked at. But in this case the relation is that of a main predication to a downgraded predication which it includes. For example:

'Misogynists
'Men who hate women' } amuse me' ⟶ '(Some) men hate women'
i.e.: (men' ⟨the' . HATE . women⟩ . AMUSE . me) ⟶
(men . SOME . (men . HATE . women))

For every qualifying predication there is a corresponding proposition in which the linking argument is existentially quantified, and this existential proposition is, in the cases we have seen, the presupposition of the main predication.

As we have seen elsewhere, downgrading underlies many varied syntactic and lexical manifestations: relative clauses, reduced relative clauses, adjectives, prepositional phrases, adverbials, certain categories of nouns, etc. Some of these variations are now exemplified, and the arrow still represents *potential presupposition*:

(10) '*The Governor of Idaho* is currently in London' ⟶ 'Idaho has a Governor.'

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(11) '*Low-flying bicycles* are dangerous' ⟶ 'Some bicycles fly low.'
(12) 'My friend is *the mayor's son*' ⟶ 'The mayor has a son.'

Less obviously, presuppositions can be expressed through other types of subordinate clause; e.g. nominal relative clauses, as in cleft and 'pseudo-cleft' sentences (p. 263):

(13) '*What annoyed me* was his hypocrisy' / 'It was his hypocrisy *that annoyed me*' ⟶ 'Something annoyed me.'

Adverbial clauses:
(14) 'He was Arsenal's captain *when it was the best team in the country*' ⟶ 'Arsenal was the best team in the country (at some time).'
Comparative clauses:
(15) 'Tom has a bigger stamp-collection *than I have*' ⟶ 'I have a stamp-collection.'
Participial clauses:
(16) 'I don't regret *leaving London*' ⟶ 'I (have) left London.'
Nominalizations (see p. 183):
(17) '*Lee's surrender to Grant* spelt the end of the Confederate cause' ⟶ 'Lee surrendered to Grant.'
That-clauses:
(18) 'John knows *that we are helping him*' ⟶ 'We are helping him.'

(Remember the negation test as a criterion of presupposition. If, for example, we wish to check the presuppositional relationship of (13) above, we make the first sentence negative ('What annoyed me wasn't his hypocrisy') and observe whether the second sentence is still assumed to be true. It is. Similarly for the other cases.)

That qualifying predications underlie the majority, if not all of these cases, cannot be established without detailed analysis, so I must be content to point out just one or two details which support this claim. For example, in cases (13) and (14) paraphrases with relative clauses are possible: *What annoyed me* can be expanded as *That which annoyed me*, and *when it was the best team in the country* can be (stiltedly) paraphrased as *at the time at which it was the best team in the country*. In respect of (15), we noted in the last chapter that the meaning of comparative clauses involves downgrading (p. 265). More difficult cases are (15)–(18), which appear to express subordinate rather than downgraded predications. I shall return to these later (pp. 311–16), but will point out here that

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participial and nominalized constructions can be paraphrased by a *that*-clause; for example, (16) and (17) can be paraphrased:

(16a) 'I don't regret it that I (have) left London.'
(17a) 'The fact that Lee surrendered to Grant spelt the end of the Confederate cause.'

Enough has been said, I hope, to establish the plausibility of tracing a considerable range of presuppositions to the qualifying predication as a feature of semantic representations.

To increase our ability to derive presuppositions from properties of semantic representations, two further points may be noted:

(a) Presupposition, like entailment (p. 136) is a transitive relation; i.e. if *X* presupposes *Y* and *Y* presupposes *Z*, then *X* presupposes *Z*. For example:
X: 'The inventor of the flying bicycle was a genius.' ⟶
Y: 'Someone invented the flying bicycle.' ⟶
Z: 'There is a bicycle which flies.'
(b) For every *X*, if *X* presupposes *Y* and *Y* entails *Z*, then *X* presupposes *Z*. For example:
X: 'Low-flying bicycles are dangerous.' ⟶
Y: 'Some bicycles fly low', which entails
Z: 'Some bicycles fly.'

With these cumulative rules, it is now easy to see how a single utterance can carry a considerable number of presuppositions. But to press the point further, let us note that many other presuppositions can arise indirectly, through the operation of the rule of attribution mentioned in the last chapter. The effect of that rule was to convert a single componential feature such as −MALE into a downgraded predication ⟨the': −MALE⟩. This means that every single feature within an argument is potentially associated with a presupposition. Given an argument containing three features: HUMAN ADULT −MALE 'woman' – it is possible to change this, by the rule of attribution, into three different but equivalent representations as follows (remembering that the order of features is immaterial):

(a) ADULT −MALE' ⟨the': HUMAN⟩
(b) −MALE HUMAN' ⟨the': ADULT⟩
(c) HUMAN ADULT' ⟨the': −MALE⟩

By the rule of coreference (p. 163), each of the qualifying predications above is equivalent to:

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(a) ⟨ADULT — MALE: HUMAN⟩
(b) ⟨— MALE HUMAN: ADULT⟩
(c) ⟨HUMAN ADULT: — MALE⟩

From these, by existential quantification, we derive three separate potential presuppositions:

(a) 'Some female adult is/was human'
(b) 'Some female human being is/was adult'
(c) 'Some adult human being is/was female'

The fact that these propositions do not contain any earth-shatteringly novel information does not alter the validity of the observation that they are potentially presupposed in any normal use of the word *woman*.

Presuppositions arising from selection restrictions are basically of the same kind:

'Brendon ate the pizza' ⟶ 'Brendon is an animate being.'
'Is the treasurer pregnant?' ⟶ 'The treasurer is female.'

The selection restriction is formalized (p. 140) as a contextual redundancy rule which adds such features as ANIMATE, —MALE to the argument affected. Since by the rule of attribution such features can be expanded into downgraded predications ⟨**the'** : ANIMATE⟩, etc., the presuppositional character of selection restrictions is explained by the same generalization that has already been applied to other cases: that every qualifying predication is potentially the source of an existential presupposition.

I have not suggested that *all* presuppositions can be explained in this way. But the rule which associates presuppositions with qualifying predications appears to be a very general one, and justifies some confidence in the view that presuppositions of sentences may be predicted on the basis of their semantic representations. I have already indicated, however, by using the term '*potential* presupposition', that semantics does not provide the whole answer. Some have argued, indeed, that there is no such thing as presupposition in the logical or semantic sense: that all supposed cases of logical presupposition are actually cases of entailment. The kind of evidence brought to bear in support of this view includes sentences such as the following, which, despite their oddity, must be acknowledged to make sense:

(14a) 'He WASN'T Arsenal's captain when it was the best team in the country – because it never WAS the best team.'
(15a) 'Tom DOESN'T have a bigger stamp-collection than I have – in fact I don't have a stamp-collection at all.'

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(16a) 'I DON'T regret leaving London – actually I have never left it.'

These are examples of so-called PRESUPPOSITION CANCELLATION: they show that the 'presuppositions' of sentences (14)–(16) above can actually be contradicted. According to the negation test, (14a)–(16a) ought to be nonsensical – but clearly, at least when spoken with the special contrastive stress as marked, they are not.

Another limitation of the semantic explanation is obvious from examples like:

(19) Flying bicycles do not exist.
(20) The unicorn lives in trees.

If a presupposition could be automatically derived from every qualifying predication, (19) ought to presuppose 'Some bicycles fly' and (20) ought to presuppose 'Some animals are unicorns'; but such implications are clearly absent from these sentences – the speaker of (19) in fact denies the existence of bicycles that fly.

So what is needed, it appears, is a *set* of conditions for a presupposition. In part, these conditions are semantic – they derive from a semantic representation *X* the *potential* presuppositions of *X*. But the set of conditions also includes pragmatic conditions. Hence semantics is concerned with specifying *potential* presuppositions; pragmatics turns these into *actual* presuppositions.

Pragmatic Presuppositions

We are now in a position to examine the pragmatic concept of presupposition more carefully. I have roughly defined it as follows: 'In saying *X* the speaker *s* purports to take for granted the truth of *Y*.' But it is not clear what 'taking for granted' means. In a pragmatic view of presupposition, a distinction is usually drawn not between presupposition and entailment, but between presupposition and ASSERTION, where *presupposition* is that part of the content of an utterance which is treated as if it is familiar, and *assertion* is that part which is treated as if unfamiliar, new, or informative. Often the distinction corresponds to the traditional distinction between subject and predicate:

(21) The Prime Minister's son drives fast cars.

In this example, the presupposition can be roughly expressed as follows:

(21a) 'There is an *x* such that *x* is son of the Prime Minister.'

and the assertion can be expressed as follows:

(21b) '*x* drives fast cars.'

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On the face of it, this matches the logical conception of presupposition – we note, in particular, that the presupposition is unaffected by negation. But pragmatic presupposition can be thought of, in more dynamic terms, as basic to the progress of communicative discourse. When two people engage in conversation, they share all kinds of background knowledge: not just knowledge specific to the situation in which they find themselves, but general knowledge about the world. As the conversation progresses, its 'context' progresses, in the sense that new elements are added to the pool of knowledge that can be taken for granted: the assertion of one proposition can become the presupposition of the next. This indeed is illustrated in the following examples, which are a problem for a logical account of presupposition, but fit naturally into a pragmatic account:

(22) Sheila's engaged to be married, and her fiancé's an airline pilot.
(23) *Sheila's fiancé's an airline pilot, and she's engaged to be married.

According to the logic of coordination (see p. 170), we should expect (23) to mean the same as (22); but (23) is distinctly odd compared with (22), and this is obviously due to a cart-before-horse ordering: the content of the second clause has already been taken for granted in the first clause. The natural order whereby presupposition repeats the content of previous assertion is illustrated in (22). A similar illustration is:

(24) Henry lost the election, and it is regrettable that he did so.
(25) *Henry lost the election, and regrettably, he did so.

Once again, the latter sentence is odd, because its second clause asserts something which has already been communicated, and should therefore be presupposed. On the other hand, (24) is acceptable because *that he did so* expresses a presupposition. These examples show that the appropriateness of presupposition depends on ordering.

Any utterance belonging to a discourse, then, will tend to contain (a) elements of meaning which are *presupposed* in that they are already part of the 'context', or 'pragmatic universe of discourse' (see Kempson 1975, pp. 167–73); and (b) elements which are *asserted* in that they are not part of that context. This seems a good way of defining presupposition. But it needs to be refined in various ways. First, there is no such thing as 'context-free' discourse – so even the opening of a conversation will take for granted certain background information. The opening exchange of Wilde's play *The Importance of Being Earnest* runs as follows:

ALGERNON: Did you hear *what I was playing*, Lane?
LANE: I didn't think it polite to listen, sir.

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Algernon's opening question contains the presupposition 'I was playing something' – which Algernon can take as common ground between himself and Lane (in spite of Lane's disclaimer) because he can assume that Lane has heard his piano playing in the next room. This is supplied by the observable situation, not by previous speech. Second, the 'common ground' is not what is *actually* shared by the minds of speaker and hearer, but what the speaker, for the purpose of the discourse, *assumes* that they share. Hence a speaker may – either by mistake, or by design – inappropriately presuppose something of which the hearer may be ignorant. To quote Algernon again:

> ALGERNON: I have invented an invaluable permanent invalid called Bunbury, in order that I may be able to go down into the country whenever I choose. Bunbury is perfectly invaluable. If it wasn't for Bunbury's extraordinary bad health, for instance, I wouldn't be able to dine with you at Willis's to-night, for I have been really engaged to Aunt Augusta for more than a week.
>
> JACK: I haven't asked you to dine with me anywhere to-night.

But there are more complications than this. There are actually three distinct levels – corresponding to the linguistic levels of semantics, syntax and phonology – at which the differentiation of 'presupposition' from 'assertion' can be observed. Failure to separate them can easily result in confusion, and so I shall deal with each separately.

1. Definite/Indefinite Meaning

On the semantic level, we have already examined definite expressions (e.g. noun phrases beginning with *the*, *this*, *your*, etc., as well as personal pronouns), and we have noted (pp. 156–60) that they convey the assumption that their reference is uniquely determinable through the shared knowledge of speaker and hearer. This assumption could, in the present context, be described as a presupposition that the referent of the definite expression exists. Suppose the following questions are addressed to a bookseller:

(26) Do you have the biography of Lillian Gish?
(27) Do you have a biography of Lillian Gish?

By choosing *the*, the speaker of (26) conveys his presupposition of the existence of a biography of Lillian Gish. Such a presupposition is not present in (27). Such expressions as *the biography of Lillian Gish* are often called, following the term used by Bertrand Russell, *definite descriptions*, and it is often considered that they carry the further presupposition of uniqueness – viz. the presupposition that there is only one

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object which meets the specified description – in this case, that there is only *one* biography of Lillian Gish. From discussion of definiteness in Chapter 9, it will be clear why this is not so: there is no implication in (26) that Lillian Gish's life-story has been written only once. But there is an implication of a different kind: that speaker and hearer share sufficient information for them to identify the *same* biography as the referent of the phrase.

We also noticed in Chapter 9 the role of the definite operator in signalling coreference between two neighbouring elements of the text. In this sense a phrase like *the bottle* or *it* is capable of referring back to, and thereby presupposing, knowledge which has already been communicated in the same discourse. A very simple example of such a presupposition is:

(28) On the table there was *a bottle* ... She took { *the bottle* ... / *it* ...

In contrast, indefinite expressions such as *a bottle*, as (28) shows, signal that their referents have not been previously identified, and therefore that they belong to the 'assertion' part of the sentence, rather than to the 'presupposition' part.

2. Topic/comment

On the syntactic level, we have already met (pp. 194–5) the contrast between *topic* and *comment* (sometimes a related distinction is made between *theme* and *rheme*). In English, which is a 'subject-prominent' language, rather than a 'topic-prominent' one like Chinese or Japanese, topic and comment correspond closely to the traditional grammatical distinction between subject and predicate. The topic/comment distinction, however, is taken to be psychological rather than purely structural: the topic in some sense being what the speaker, in a given clause, has chosen to talk about, the comment being what he has decided to say about it. This clearly establishes an association between topicalization and definite reference. For example, (29), in which the definite phrase fills the topic position, is a more felicitous utterance than the synonymous (30), in which it does not:

(29) The bottle contained a colourless liquid.
(30) A colourless liquid was in the bottle.

But (30) is also acceptable, so this association of definiteness with the topic is a matter of preference rather than of grammatical rule.

What makes the topic important, from the present point of view, is its tendency to be unaffected by negation. This is illustrated by the next

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two examples, which, like the last two, appear to be equivalent in terms of conceptual meaning:

(31) The earthquake caused the collapse of the bridge.
(32) The collapse of the bridge was caused by the earthquake.

Many people will feel that although (31) and (32) could in no circumstances differ in truth-value, their negations (31a) and (32a) do differ slightly in the following respect: whereas from (32a) we infer that the bridge collapsed, from (31a) we do not:

(31a) The earthquake did not cause the collapse of the bridge.
(32a) The collapse of the bridge was not caused by the earthquake.

When we negate a sentence, that is, we are inclined not to negate the topic (the 'thing we are talking about'), but only the comment we make on it. This means that according to the negation test, (31) *entails* 'The bridge collapsed', whereas (32) *presupposes* it.

I have described 'topic/comment' as a syntactic distinction, and in fact I would not attempt to explain the difference between (31) and (32) in terms of conceptual meaning at all. Since they differ from one another only in terms of the passive transformation, (31) and (32) have the same semantic representation. The difference between them is a matter of how the message is presented in terms of order and focus, and belongs to what I earlier (p. 19) called 'thematic meaning'. Thematic meaning is, I assume, independent of conceptual meaning; it belongs to a different level of linguistic organization entirely. But we now have to observe that the thematic choice of topic can have not only a *positive* effect of adding emphasis to some aspect of the conceptual message, but also a *negative* effect of suppressing certain possibilities of interpretation which are implicit in the conceptual meaning. An instance of this has already been noted in connection with quantifiers (p. 174), and we have also noted a case (p. 258) where surface structure ordering has a bearing on the interpretation of adverbials in relation to negation.

In conceptual meaning, the scope of negation is co-extensive with the predication governed by **not** (see p. 167). In thematic meaning, the influence of the negative is normally limited still further to the 'comment' which follows the negative word. One sign of this is that it is normal to use non-factual forms such as *any* and *yet* in place of *some*, *already*, etc., in a post-negative position, but not (except, conceivably, with quite a different meaning) in a pre-negative position:

(33a) John doesn't trust anybody (33b) *Anybody doesn't trust John

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Scope of negation is indicated here by the horizontal bracket. In contrast to (33a), a sentence in which *somebody* follows the negative, like (34), is quite atypical:

(34) John doesn't trust somebody.

But even this oddity can be explained if, by the rule of subordination (p. 257), *somebody* is assumed to express a quantifier outside the scope of **not**. Thus in (34) the scope of negation is limited both by conceptual meaning and by thematic meaning. The main point, however, is that the topic/comment division leads to an interpretation of 'presupposition' which is independent of that of the definite/indefinite distinction.

3. Focus/Presupposition

Now we turn to yet a third way of drawing the line between 'presupposition' and 'assertion' – one that is realized through phonology, rather than through syntax or semantics. The variable we are interested in now is the position of the nucleus, or major stressed syllable, in a tone unit. It is usual for the nucleus to occur at the end – roughly, on the last fully stressable syllable of the tone unit – so that the *new* information in the tone unit follows the *given* information (see p. 20). But for special contrastive emphasis, the nucleus can occur in an earlier position, or even a later position, as well as in its expected place:

(35) Her sister flew to Paris last FRÌDAY.
(36) Her sister flew to PÀRIS last Friday.
(37) Her sister FLÈW to Paris last Friday.
(38) Her SÌSTER flew to Paris last Friday.

[Capitals, in (35)–(38), signal the position of the nuclear stress and the grave accent indicates a falling tone. We assume that each sentence is pronounced with a single tone unit.]

Interpreted contrastively, these sentences have roughly the same meanings as these cleft sentences:

(35a) It was on FRÌDAY that her sister flew to Paris.
(36a) It was to PÀRIS that her sister flew on Friday.
(37a) It was by AÌR that her sister went to Paris last Friday.
(38a) It was her SÌSTER who flew to Paris last Friday.

And on this basis we can suggest (see Chomsky 1972, pp. 81–101) that the element bearing the nucleus is the FOCUS of information, and that the remainder of each sentence is the PRESUPPOSITION:

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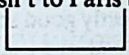
	PRESUPPOSITION	FOCUS
(35b)	Her sister flew to Paris at some time x	x = last Friday
(36b)	Her sister flew to some place x last Friday	x = Paris
(37b)	Her sister went by some means x to Paris last Friday	x = air
(38b)	Some person x flew to Paris last Friday	x = her sister

Insofar as (35)–(38) are equivalent to the cleft sentences (35a)–(38a), they pass the negation test for logical presupposition. Thus if (36) means the same as (36a), both (36) and (36a) have (36b) as their presupposition. This can be tested, in the case of the cleft sentence, by the fact that its negative sentence has the same presupposition:

(36c) It wasn't to Paris that her sister flew last Friday.



And in fact, the negation of (36), so long as it retains the contrastive focus on *Paris*, also seems to have this presupposition:

(36d) Her sister didn't fly to PÀRIS last Friday.

This is because the effect of contrastive focus, in a negative sentence, is to restrict the scope of the negation so that only the element which receives the nuclear stress is affected by it. Thus far, then, the focus/presupposition contrast realized by intonation seems to correspond with the logical notion of presupposition we have discussed previously.

But there are also differences. Every word in the sentence illustrated in (35)–(38), and for that matter every syllable, can be the locus for nuclear stress, but not all these possibilities correspond with distinct cleft sentences. Consider the following three possibilities:

(39) HÈR sister flew to Paris last Friday (i.e. '... not HIS sister')
(40) Her sister flew TÒ Paris last Friday (i.e. '... not AWAY FROM Paris')
(41) Her sister flew to Paris LÀST Friday (i.e. '... not the Friday BEFORE')

None of these sentences have corresponding cleft sentences; e.g. corresponding to (39) there is no sentence (39a), although there is a sentence (39b):

(39a) *It was HÈR that sister flew to Paris last Friday.
(39b) It was HÈR sister that flew to Paris last Friday.

But (39b) is the same cleft sentence as (38a), except that the nuclear stress is shifted from *sister* to *her*. In other words, the only way to capture the

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force of (39) by a cleft sentence is to use the same device as that used in (39b) – intonation shift. The conclusion is that there is no one-to-one correspondence between the focus of a cleft sentence and the contrastive focus of intonation; in spite of their resemblance to one another, these two phenomena are independent, and take place on different linguistic levels. If any further demonstration of this is needed, consider a sentence like (42), in which the major intonation focus occurs outside the 'syntactic focus' of the cleft sentence:

(42) It was Jack Horner who sat in the CÒRNER.

Sentences like this, in which intonational and syntactic focus are quite distinct, may seem unusual, but they make perfectly good sense in a rather special context. Such a context might be imagined as a quiz in which the question-master is testing a competitor's knowledge of nursery rhymes:

(43) *A*: Who was it who sat on a tuffet?
B: It was Little Jack Horner.
A: No, it was Jack Horner who sat in the CÒRNER. The person who sat on a tuffet was Little Miss Muffet.

There is clearly good reason, ignoring intonation focus, to regard *the corner* here as a presupposed part of the sentence. First, *the corner* has definite reference; second, *the corner* is part of the presuppositional part of a cleft sentence, so that a presupposition 'Someone x sat in the corner' may be assumed. But what is apparently mystifying is that the intonation focus on *corner* brings its own focus/presupposition structure, which conflicts with that of the cleft sentence. For the cleft-sentence construction, the division is as follows:

PRESUPPOSITION	FOCUS
(42a) Someone x sat in the corner	x = Jack Horner

But for the intonation focus, it is:

PRESUPPOSITION	FOCUS
(42b) It was Jack Horner who sat at some place x	x = in the corner

Clearly both of these analyses cannot be correct, unless the focus/presupposition contrast is understood differently in the two cases. And it is to this latter conclusion that we are forced.

I do not, however, wish to pursue at this point the different interpretations of 'presupposition' which have been revealed in this discussion. I shall return to them on p. 300, but now it is enough to note that three pragmatic concepts of presupposition have been introduced, and that each of them is distinct from the others. Just as there were difficulties in

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the logical formulation of presupposition, so there is no easy solution to the problem of pragmatic presupposition. In order to find that solution, I now propose to take a brief look at the third implication relation with which this chapter began – that of implicature.

Implicature

Chapter 16 will investigate implicature more generally; at present, I am interested in the type of implicature introduced in the earlier example:

(44) 'Few girls are coming' implicates 'Some girls are coming.'

It was noticed then that the hallmark of implicature is its cancelability:

(45) 'Few girls are coming – *in fact, none at all are.*'

It may on the other hand be noticed that implicature is associated with semantic conditions of well-formedness. The proposition 'Few bachelors are married' is of dubious acceptability, and this follows from the fact that it implicates a contradiction: *'Some bachelors are married.' Evidently implicature, although it has been called '*pragmatic* implication', is closely bound up with *semantic* representations. But how can this be explained? Quite a large class of implicatures, including (44), can be accounted for by reference to the semantic operation of *negation*. Thus in (44), *few* means the same as *not many*, and *many* is a hyponym of *some* (p. 172); so to get from 'few' to 'some' in semantic terms we subtract (a) the negative operator **not**, and (b) at least one other feature. A further example of implicature will clarify this:

(46) 'No one other than Peter came' implicates 'Peter came.'

The interesting thing here is that (46) differs from (47) by a single linguistically significant property – namely that (46) *implicates* 'Peter came', while (47) *entails* it:

(47) 'Only Peter came' entails 'Peter came.'

To (46), but not to (47), one could add '... and for that matter, Peter didn't come either'. In linguistic terminology, (46) and (47) may be said to constitute a 'minimal pair'.

To discover the connection between implicature and negation we have to consider the pragmatic character of negation, as distinct from its logical character as discussed on pp. 167–9. Negatives are generally associated with certain expectations on the part of the speaker or hearer:

(a) *a cancelled expectation* (which is the corresponding positive proposition, with **not** omitted).

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(b) *an actual expectation* (which is that part of the positive content of the proposition that remains after the negated content has been 'subtracted' from it).

For example, 'I didn't eat many of the chocolates' *cancels* the expectation that 'I ate many of the chocolates', and has the actual expectation that 'I ate some of the chocolates.' The two expectations may be formulated as implicatures as follows:

(a) not-*X* implicates 'Someone (normally the hearer) has assumed that *X*'

(b) not-*X* implicates some proposition *Y*, where *Y* is entailed by *X*.

The implicatures (a) and (b) seem to have their respective sources in two quite general pragmatic principles governing the use of negation:

PRINCIPLE I: One doesn't bother to negate a proposition unless someone has or might have a reason to suppose it is true.

PRINCIPLE II: When one negates a proposition, it is assumed in general that part of its contents remains positive.

Perhaps at a more general level still, these two principles can be subsumed under what H. P. Grice (1975) has called the COOPERATIVE PRINCIPLE (see pp. 331–4). Grice has postulated, as a means of explaining implicatures, that in conversation speakers usually behave cooperatively in that they make their conversational contribution 'such as is required ... by the accepted purpose or direction of the talk exchange ...' (1975, p. 45). He proposes, specifically, that they obey certain maxims of good conversational behaviour, such as the following MAXIM OF QUANTITY:

Make your contribution as informative as is required (for the current purposes of the exchange).

What we can show, now, is that the two Principles I and II are special manifestations of this maxim of being 'as informative as is required'.

The first Principle (that one uses a negative only where the positive has been presumed to be true) is derivable from the Maxim of Quantity via another principle called the Principle of NEGATIVE UNINFORMATIVENESS (see Leech 1981). It has sometimes been pointed out (see, e.g., Katz 1964b) that negative sentences are equivalent in meaning to a disjunction of positive sentences: EITHER S_1 OR S_2 OR S_3 ... This is because the truth-conditions of a negative proposition can be partially specified by the subtraction of any semantic feature or combination of semantic features from the meaning of the equivalent positive proposition. Thus (assuming a literal interpretation of *man*) 'Joe is not a man' can be interpreted according to context as 'Joe is a human adult (who

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is not male)', 'Joe is a human male (who is not adult)', 'Joe is an adult male (who is not human)', 'Joe is a human being (who is not male and not adult)', etc. It is evident, then, that a negative proposition such as 'Joe is not a man' is extremely uninformative in comparison with its corresponding positive proposition. This point is clearer still in the case of utterances like

(48) Celia's fingerprints were not found on the murder weapon.

where the number of people whose fingerprints might have been found on it runs, in principle, to many millions. According to the Maxim of Quantity, then, negative propositions will tend to be avoided because of their relative uninformativeness. But there is one situation in which they will not be uninformative: a situation in which an assumption has been made that the corresponding positive proposition is true. For example, (48) will be reasonably uttered precisely if there is some reason why suspicion of the murder should fall on Celia. A negation, that is, is in pragmatic terms a denial. ('I AM NOT HAVING AN AFFAIR', SAYS PRIEST runs an eye-catching headline in the *Daily Express*, 14 June 1978.)

The above argument explains Principle I above. Another argument from the Principle of Negative Uninformativeness can also explain Principle II. Consider the example:

(49) My neighbour upstairs is not a bachelor.

Let us take for granted that *bachelor* is defined by the four features HUMAN, ADULT, MALE, and ⟨'never-married'⟩ (the last feature being a qualifying predication). Then some of the variant readings that 'not a bachelor' might theoretically have in a sentence like (49) are the following:

(a) ADULT MALE and 'never-married' (but not HUMAN), OR
(b) HUMAN MALE and 'never-married' (but not ADULT), OR
(c) HUMAN ADULT and MALE (but not 'never-married') OR
(d) HUMAN and 'never-married' (but not ADULT or MALE) ... etc.

Fillmore (1969, p. 123) argues that in practice, interpretation (c) is chosen, so that (49) in effect means 'My neighbour upstairs is a married man'. That is, he regards 'My neighbour is HUMAN ADULT MALE' in (49) as presupposed, and the remaining feature 'never-married' as asserted. By the conjunction test (p. 279), though, the relation between (49) and 'My neighbour upstairs is a married man' is one of implicature rather than of presupposition. We see this from the possibility of its being contradicted by an appended proposition:

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My neighbour upstairs isn't a bachelor – in fact he/she's not

even { male. / human. / adult. }

Fillmore's observation does, however, seem to be correct to the extent that the features of 'bachelor' are not equally vulnerable to negation. There seems to be a hierarchy of features within the scope of **not**, according to their likelihood of being cancelled by the negation. Such a hierarchic ordering no doubt relates to the ordering of features by redundancy rules (p. 110). It also seems likely that in many cases, as in the 'bachelor' example, negation eliminates only one feature of the positive proposition – that feature which carries the chief weight of new information in the context. 'Few people died' implicates 'Some people died' because only the 'multal' feature ↑AMOUNT is liable to be erased, leaving the quantifier (whose presence is predicted by a redundancy rule) intact.

The 'bachelor' example also illustrates that the feature most vulnerable to negation in many instances seems to be a downgraded predication. Notice, in the following, that it is only the modifying predication expressed by the adverb or adverbial phrase that seems to be affected by negation:

(50) 'I haven't seen Bill *for three weeks*.'
(51) 'She hasn't polished the table *very nicely*.'
(52) 'I never eat Chinese food *with chopsticks*.'
(53) 'My father doesn't *often* go to the theatre.'

Normally interpreted, these could be closely paraphrased as follows:

(50a) 'I have seen Bill [but not for three weeks].'
(51a) 'She has polished the table [but not very nicely].'
(52a) 'I sometimes eat Chinese food [but not with chopsticks].'
(53a) 'My father (sometimes) goes to the theatre [but not often].'

The actual implicatures of (50)–(53) are the unnegated parts of (50a)–(53a), that is, those parts outside the square brackets.

Although there is no hard and fast criterion for deriving implicatures from semantic representations, the evidence just given suggests a more precise formulation of PRINCIPLE II as follows:

PRINCIPLE IIa: If *X* is a negative proposition
and if F is the most communicatively significant feature within the scope of the negation in *X*

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and if *Y* is a proposition identical to *X* except that it is positive and does not contain *F*
then *X* implicates *Y*.

The difficulty lies, of course, in the meaning of 'communicatively significant': this is an intuitive concept, and one that clearly belongs to pragmatics rather than to semantics. But it can now be seen that Principle II (or its revised version, Principle IIa) follows in a natural way from the Maxim of Quantity. This Maxim proclaims that if you have reason (in accordance with Principle I) to deny something that has been presumed true, then you should not do so too uninformatively. Now, the *more* specific a positive proposition is, the *less* specific its negation is. Hence, to make a denial as informative as we can (without making it false), we have to deny the most general proposition that is incompatible with the truth. Returning to (49), suppose a speaker denies that '*a* is a bachelor' in circumstances where he knows not only '*a* is a bachelor', but '*a* is human' to be untrue, then the speaker is being less informative than he could be: he could have said '*a* is not human', and thus given more specific information than '*a* is not a bachelor'. Therefore the denial '*a* is not a bachelor' will generally be taken to mean that (if the speaker is observing the Maxim of Quantity) the feature of meaning that distinguishes 'bachelor' from superordinate terms cannot be truthfully predicated of *a*. Similarly with (52): imagine that the speaker of 'I never eat Chinese food with chopsticks' never eats Chinese food *at all*. Then (52), although a true statement, will be misleading, because it is used in circumstances where a more general denial could have been both truthfully and conveniently uttered. Therefore in practice, the part of a negative proposition which is usually assumed to be denied is the part of its meaning which is least general and predictable in context – or, to use the phrase already used – the part which is most *communicatively significant*.

There is a further factor that we must take account of in exploring the working of Principle IIa: the scope of negation. It has been seen that 'scope of negation', in the broad sense of 'that part of the utterance which is vulnerable to, or affected by, negation', can be interpreted both semantically and pragmatically, and that among the factors which tend to place an element pragmatically outside the scope of negation are (a) definite rather than indefinite reference; (b) topic rather than comment position; (c) non-focal rather than focal position in the intonation pattern of the utterance. If, for example, we introduce contrastive focus into (51) as follows:

(51b) She hasn't POLISHED the table very nicely

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the implicature shifts with the shift of focus: 'She has done *something* nicely to the table, (but she hasn't polished it).' In this way, the interpretation of 'communicatively significant', and hence of 'implicature' is dependent on pragmatic factors connected with negation.

We are ready at last to return to the question of defining presupposition. In the traditional logical definition of presupposition, the *negation test* – the criterion of a proposition's invulnerability to negation – is crucial. But we have noted that presuppositions are in principle cancellable, and now it is clear that a number of pragmatic influences impinge on this criterion. We have also seen that a general class of implicatures (pragmatic implications) can be defined for negative propositions. It is against this background that the logical definition of presupposition (for propositions) can be revised, in a way that takes account of pragmatics:

(54) *X* PRESUPPOSES *Y* means that { (a) *X* ENTAILS *Y*; (b) not-*X* IMPLICATES *Y*

This definition (where *X* and *Y* are propositions) contains two conditions: a logical condition (a), and a pragmatic condition (b). It thus brings us to the conclusion anticipated at the beginning of this chapter: that presupposition is in part a semantic, and in part a pragmatic relation. In retrospect, we can now see that the logical definition of presupposition errs in treating it as distinct from entailment: semantically, it is nothing but a special kind of entailment. We can also see that our earlier attempts at defining presupposition pragmatically amounted to definitions of the pragmatic conditions under which the negation of *X* will be interpreted as failing to deny one of *X*'s entailments, *Y*.

Summary and Conclusion

The quest for presupposition has taken us on a rather long and winding path. But the journey has been instructive, for a number of reasons. We have avoided the opposed pitfalls of treating presupposition (a) as entirely a logical matter and (b) as entirely a pragmatic matter, and have arrived at a solution which treats presupposition as a relation partly logical and partly pragmatic. This conclusion may seem too complex; but it merely underlines the message which has been emphasized more than once in this book, that meaning cannot be studied as a purely truth-conditional matter, divorced from the communicative purposes to which language is put.

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15. Factuality

Factuality, Non-factuality, and Counterfactuality

In order to explain the conditions under which certain propositions will be entailed or presupposed by others, it is important to distinguish those predications which are *factual* from those which are not. Of the relative clauses which occur in the following sentences, only the first carries the property of factuality:

(1) 'They'll send us postcards of the interesting places they visit' presupposes 'They will visit (some) interesting places.'
(2) 'Please send us postcards of any interesting places you visit' does *not* presuppose 'You will visit (some) interesting places.'
(3) 'If you enjoy history, Rome is the European city for you to visit' does *not* presuppose 'You will visit/have visited some European city.'

By saying that the relative clause in (1) is factual, but that those in (2) and (3) are not, I mean that only from (1) do we infer that 'They will visit (some) interesting places' is a fact, something which is assumed actually to take place or to have taken place. As these examples indicate, syntactic construction plays a role in signalling factuality or its absence: it is the occurrence of *any* that neutralizes the factuality of the relative clause in (2), and the infinitive clause that has a comparable effect in (3). Such a contrast may be observed not only in downgraded predications, but in subordinate predications, where factuality provides the condition for an entailment relation:

'He *forced* me to attend the meeting' entails 'I attended the meeting.'
'He *wanted* me to attend the meeting' does *not* entail 'I attended the meeting.'

The contrast, again, is between commitment and non-commitment to the truth of what is said in the subordinate clause. There is still a further possibility, which is that there is a commitment to the falsehood of what is contained in the subordinate clause:

'He prevented me from attending the meeting'
entails 'I did not attend the meeting.'

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These three kinds of imputation may be termed *factuality*, *non-factuality*, and *counterfactuality*.

Although factuality corresponds to some extent with the choice of syntactic construction, in many cases it seems to be determined rather by the meaning of the lexical verb or adjective with which it is associated. Lakoff (in *Linguistics and Natural Logic*, 1970, pp. 30–43) suggested rules by which positive, neutral, and negative presuppositions are 'activated' by a given predicate. 'Realize', for example, imposes factuality on the dependent clause associated with it, whereas 'want' imposes non-factuality. Within the framework of this book, no special apparatus is required for these rules, as they fall quite naturally into the category of contextual redundancy rules (pp. 139 ff.) which, for a given predicate, assign semantic features or conditions to its terms. Factuality, that is, can be treated as a kind of selection restriction.

A predicate (or more precisely, a feature in a predicate) may be classified as *factive*, *non-factive*, or *counterfactive* according to whether it ascribes factuality, non-factuality, or counterfactuality to the associated subordinate predication. Thus 'realize', 'suspect' and 'pretend' are instances of factive, non-factive, and counterfactive predicates respectively.

'Marion *realized* that her sister was a witch'
presupposes 'Marion's sister was a witch.'
'Marion *suspected* that her sister was a witch'
does not presuppose 'Marion's sister was a witch',
nor 'Marion's sister was not a witch.'
'Marion *pretended* that her sister was a witch'
presupposes that 'Marion's sister was not a witch.'

The form of the rules which specify these conditions might be written as follows:

REALIZE → (X^{+}) (factive)
SUSPECT → (X^{0}) (non-factive)
PRETEND → (X^{-}) (counterfactive)

The raised '+', '0' and '−' are used here, and will be so used from now on, as symbols for the factuality, non-factuality, and counterfactuality of predications. They may be added to a predication symbol, or to a predicate symbol.

'Factive', 'non-factive' and 'counterfactive' are not totally distinct categories, since some predicates can belong to more than one of them: 'be nice', for instance, can be both factive and non-factive:

'It's nice that John has many friends.' (factive)
'It's nice to have many friends.' (non-factive)

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It is arguable that the relative opposition of *volition* can belong to all three categories:

'John insisted on reading Mary's letters' (factive)
'John wanted/wished to read Mary's letters' (non-factive)
'John wished he had read Mary's letters' (counterfactive)

Presumably, all three verbs, *insist*, *want*, and *wish*, have underlying them the same feature of 'volition', but differ in their factuality conditions.

There is good reason to suppose that every predicate, and hence every predication, is marked by a factuality feature of one kind or another. We have already seen the need for factuality contrasts in subordinate and downgraded predications; it remains to observe that in main predications, too, there is a contrast between factual utterances like 'My shoes are wet', and utterances which do not make claims of fact, like 'May they never forget your kindness', 'If only I hadn't eaten all those oysters':

'My shoes are wet' entails 'My shoes are wet' (since every factual proposition entails itself).
'May they never forget your kindness' does not entail or presuppose 'They (will) never forget your kindness.'

Assuming, therefore, that every predication is marked for factuality, non-factuality, or counterfactuality, let us turn to a distinction to be drawn between two kinds of factive predicate.

Pure Factives and Conditional Factives

Pure factives are predicates such as 'REALIZE', 'BE-SORRY', 'KNOW', 'AMUSE', 'REGRET', 'BEAR-IN-MIND', 'APPRECIATE', etc., which are in the main associated with *that*-clauses or *-ing* clauses. *Conditional factives* are predicates such as 'CAUSE', 'BECOME', 'HAVE-TO', 'FORCE', 'SEE', 'HEAR', etc., mainly associated with infinitive constructions and nominalizations. When the factive predicate is positive, both these types behave in the same way, attributing factual reality to the subordinate predication:

PURE FACTIVES:
(4) 'I'm sorry that he lost his job' → 'He lost his job.'
(5) 'The politicians appreciate that the result of the election will depend on the war' → 'The result of the election will depend on the war.'

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CONDITIONAL FACTIVES:

(6) 'Airport police forced the hijacker to surrender' → 'The hijacker surrendered.'

(7) 'I saw Aunt Agnes down three whiskies' → 'Aunt Agnes downed three whiskies.'

But when each sentence containing a factive predicate is negated, the factuality of the subordinate predication is maintained only in the case of pure factives:

PURE FACTIVES:

(4a) 'I'm not sorry that he lost his job' → 'He lost his job.'

(5a) 'The politicians do not appreciate that the result of the election will depend on the war' → 'The result of the election will depend on the war.'

CONDITIONAL FACTIVES:

(6a) 'Airport police did not force the hijacker to surrender' ↛ 'The hijacker surrendered.'

(7a) 'I didn't see Aunt Agnes down three whiskies' ↛ 'Aunt Agnes downed three whiskies.'

The arrow → may be read 'from ... we conclude the truth of ...', and its negation ↛ is interpreted 'from ... we do *not* conclude the truth of ...' I have avoided using terms like 'presupposition' above, but we can now see that the difference between pure and conditional factives corresponds to the difference between presupposition and ordinary entailment as discussed in the last chapter. More exactly, the relation between the two propositions in (4) and (5) is one of *potential* presupposition, because it is always possible for the presupposition to be cancelled out:

(4b) 'I'm NOT sorry that he lost his job – because, as a matter of fact, he DIDn't lose it.'

Thus the arrow of (4a) represents a relation of implicature (see p. 280).

Conditional factives have, in a sense, been already explained. It happens that the relation of entailment between a main predication and its subordinate predication, as in (6) and (7), has been predicted by two rules given in earlier chapters: the rule of entailment (p. 135) and the rule of subordination (p. 257). The semantic representation of (7) in outline is as follows:

(7b) (i . SEE$^+$. (aunt agnes . DOWN$^+$. three whiskies))

and this, by the rule of subordination, is equivalent to:

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(7c) (aunt agnes . DOWN$^+$⟨the′ . ←SEE$^+$. i⟩ . three whiskies)′

Now if the subordinate predication 'Aunt Agnes downed three whiskies' is taken out of (7b) and treated as a separate proposition, it reads as follows:

(7d) (aunt agnes . DOWN$^+$. three whiskies)

and this is identical to the whole predication (7c), except that (7c) contains an extra feature in its predicate – namely the downgraded predication ⟨the′ . SEE$^+$. i⟩. This means, by the rule of entailment, that (7c) entails (7d); and since (7b) and (7c) are equivalent by the rule of subordination, we correctly conclude that (7b) entails (7d). What this demonstrates is that the regular relation between a main predication and its subordinate predication is one of entailment.

But we have now seen that this demonstration does not apply to all cases. If in (7b) the main predicate had been a non-factive predicate such as 'want', there would have been no entailment of the subordinate predication:

(8a) 'I wanted the girl to leave' does not entail 'The girl left.'

Something clearly obstructs the operation of the rule of entailment in this case. The explanation is that 'want' is non-factive, and hence in the semantic representation of (8a), the subordinate predication is non-factual:

(8b) (i . WANT$^+$. (girl : LEAVE^0))

The rule of subordination derives from this a non-factual main predication, which cannot be seen as comparable with the factual proposition 'The girl left':

(8c) (girl : LEAVE^0 ⟨the′ . ←WANT$^+$. i⟩)′

As we have noted earlier, entailment is a relation between propositions alone, and therefore the rule of entailment cannot apply to cases like (8c), which is non-factual and therefore not a proposition at all. This restriction is easy enough to accept, when we recall that the marker 'factual' means, when applied to propositions, 'accepted as true'. There seems to be no sense in which a non-factual or counterfactual utterance such as 'May your troubles be little ones' or 'If only I hadn't eaten that cheesecake' can be considered to entail or be entailed by some other utterance.

The 'Chain of Factuality'

The account just given of the relation between entailment and subordination provides an explanation of the behaviour of conditional

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factives like 'see' when they are dependent on a higher predication:

(9) 'Mario compelled Freda to let him drive her home.'

If we analyse this in terms of a hierarchy of subordination, one predication acting as a term of another, we notice that the factivity of each predicate ensures that entailment relations are preserved right down the chain, as indicated in the diagram on p. 307 opposite (the superscript '+' as before signifies factuality).

In simpler linear form:

(9a) $(a.P^{+}.(Q^{+}:(b.R^{+}.(c.S^{+}.(d.T^{+}.(U^{+}:(e:V^{+}))))))$

We assume here that 'CAUSE', 'HAVE-TO', 'BECOME', and 'PERMIT' are all conditional factives. Thus the whole proposition (9) entails 'Freda had to let him drive her home', which entails 'Freda let him drive her home', which entails 'He drove her home', which entails 'She went home.' But as soon as we negate the main proposition, all these entailments disappear by a kind of chain reaction.

(10) 'Mario did not compel Freda to let him drive her home'

is represented by:

(10a) $(\mathbf{not}^{+} : (a\ .\ P^{-}\ .\ (Q^{0} : (b\ .\ R^{0}\ .\ (c\ .\ S^{0}\ .\ (d\ .\ T^{0}\ .\ (U^{0} : (e : V^{0}))))))))$

in which all the '+' signs of (9a) have become '0' for neutral factuality. The same chain reaction is brought about if we subordinate (9a) to a higher predication with a non-factive predicate like 'WANT':

(11) 'Mario wanted to compel Freda to let him drive her home.'

From (11), we cannot conclude that Freda did actually let Mario drive her home. The chain of factuality can also be broken at some intermediate point by the introduction of a non-factive predicate somewhere in the hierarchy of subordination:

(12) 'Mario compelled Freda to let him *try* to drive her home.'

From this we gather that Freda had to let Mario *attempt* his driving exploit, but we are not told whether she actually got home or not.

Factuality and Presuppositions

Features of factuality are needed to explain the inferences we make from complex predications. These inferences may be in the form of ordinary

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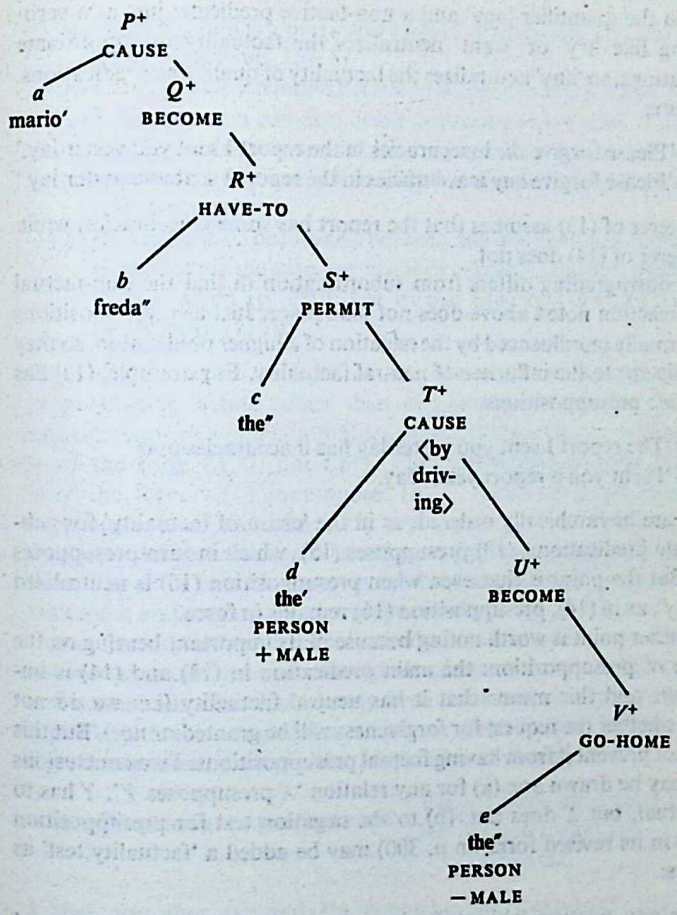
Diagram of Example (9) opposite



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entailments, or of presuppositions. In (1)–(3), factuality was a property of qualifying predications, and therefore determined the potential *presuppositions* of a sentence. A parallel can be drawn in this respect between the quantifier 'any' and a non-factive predicate: just as a verb-meaning like 'try' or 'want' neutralizes the factuality of subordinate predications, so 'any' neutralizes the factuality of qualifying predications. Compare:

(13) 'Please forgive *the* inaccuracies in the report I sent you yesterday.'
(14) 'Please forgive *any* inaccuracies in the report I sent you yesterday.'

The utterer of (13) assumes that the report has some inaccuracies, while the utterer of (14) does not.

But downgrading differs from subordination in that the non-factual chain reaction noted above does not take place. Just as presuppositions are normally uninfluenced by the negation of a higher predication, so they are resistant to the influence of neutral factuality. For example, (13) has these two presuppositions:

(15) 'The report I sent you yesterday has inaccuracies in it.'
(16) 'I sent you a report yesterday.'

These are hierarchically ordered, as in the 'chain of factuality' for subordinate predications; (13) presupposes (15), which in turn presupposes (16). But the point is that even when presupposition (15) is neutralized by 'any', as in (14), presupposition (16) remains in force.

Another point is worth noting because of its important bearing on the nature of presupposition: the main predication in (13) and (14) is imperative, and this means that it has neutral factuality (i.e. we do not know whether the request for forgiveness will be granted or not). But this does not prevent it from having factual presuppositions. Two conclusions that may be drawn are: (a) for any relation '*X* presupposes *Y*', *Y* has to be factual, but *X* does not; (b) to the negation test for presupposition (given in its revised form on p. 300) may be added a 'factuality test' as follows:

> 'For any relation "*X* entails/presupposes *Y*", the neutralization of factuality in *X* does not nullify a presupposition, although it does nullify non-presuppositional entailments.'

Since the negation of a proposition *X* actually neutralizes the factuality of *X* (see example (10a) above), this criterion for presupposition subsumes the negation criterion.

We are now in a position to reconsider the definition of presupposition, and to offer a general account of this relation which does not restrict

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it, as the definition at the end of Chapter 14 did, to a relation between propositions.

First, here are some points that have been already established.

(i) A proposition is a particular kind of predication, viz. one that has a truth-value (pp. 154–5).

(ii) Entailment is a relation between two propositions *X* and *Y* (p. 79).

(iii) Presupposition can also occur between propositions *X* and *Y*, in which case it is a special kind of entailment, viz. the kind for which *not-X* implicates *Y* (p. 300). Let us call this PROPOSITIONAL PRESUPPOSITION.

(iv) Presupposition occurs also between non-propositions and propositions: such is the case, for instance, where a question presupposes a proposition (p. 280). Let us call this NON-PROPOSITIONAL PRESUPPOSITION.

Point (i) means, in the light of our discussion of factuality, that a proposition is factual rather than non-factual (counterfactuality is a rather special phenomenon that we shall not discuss); i.e., a proposition is of the form (X^+), not (X^0). Thus propositional presupposition is of the form '(X^+) presupposes (Y^+)', and non-propositional presupposition is of the form '(X^0) presupposes (Y^+)'. The problem we face is to define non-propositional presupposition; and preferably this should be done in such a way as to show a systematic correspondence between it and propositional presupposition.

A major step in this direction is to identify systematic correspondences between propositions and other kinds of utterance – notably questions and commands. This has already been done, informally, in Chapter 5 (pp. 75–6). There we noted that all *yes–no* questions have propositions as logical responses: viz. a positive proposition or its negation:

(17) Do you want some more tea? { Yes = I want some more tea. (a)
No = I don't want any more tea. (b)

I shall say that (a) and (b) comprise the RESPONSE SET of the question; i.e. that set of propositions which act as conditions for the satisfaction of the questioner's presumed purpose in asking the question. Similarly, a *wh-* question has a response set: this time an open-ended set of propositions which substitute some piece of information for the interrogative element of the question:

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(18) What is your dog's name?
- His name is Fido. (a)
- His name is Rover. (b)
- His name is Attila, etc. (c)

(19) Who murdered Duncan?
- Macbeth murdered Duncan. (a)
- Macduff murdered Duncan. (b)
- Moby Dick murdered Duncan, etc. (c)

We have also noted in Chapter 5 that commands have satisfaction conditions which can be expressed as propositions: for example, 'Eat up your dinner' has the satisfaction condition 'You will eat up your dinner.' Once again, there is a response set: the set of propositions consisting of the satisfaction condition and its denial, describing respectively compliance and non-compliance with the command:

(20) Switch on the radio.
- You will switch on the radio. (a)
- You will not switch on the radio. (b)

To take just one more example: a wish such as 'May your troubles be little ones' can be matched with a binary set of propositions describing the fulfilment and non-fulfilment of the wish: 'Your troubles will/won't be little ones.'

It is not difficult to see how every non-propositional predication can, in this way, be systematically matched with a set of propositions constituting its response set. So we can define non-propositional presupposition as follows:

> (X^0) PRESUPPOSES (Y^+) means that (Y^+) is implied by each member of the response set of (X^0).

('Implied' is used here in a general sense including both entailment and implicature.) On this basis, for example, we can identify 'The hearer has already had some tea' as a presupposition of (17); 'The hearer's dog has a name' as a presupposition of (18); 'Someone murdered Duncan' as a presupposition of (19); and 'The radio is off' as a presupposition of (20).

This definition of non-propositional presupposition makes sense pragmatically, in terms of illocutionary force; it formulates what was intuitively described in Chapter 14 as 'taking the truth of a proposition for granted', as a precondition for the 'happiness' of a given utterance. It also gives an indication of how propositional, truth-based semantics can be extended to deal with non-propositional sentences – a topic to which we shall return in Chapter 16. Perhaps we can go even further and suggest that this definition can encompass propositional presupposition as well: at the price of stretching the notion of 'response

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set' a little, it can be argued that the two logical responses one may give to a proposition are (a) to agree with it and (b) to disagree with it. That is, the response set for a proposition consists of (a) the proposition itself, and (b) its negation. However, even if we give a unitary definition of presupposition, it is unlikely that we shall be able to find a single 'rule of presupposition' by which all cases of presupposition, or even of potential presupposition, can be predicted from semantic representations. Although downgraded predications, as already noted, account for a large class of presuppositions, other presuppositions seem to be derivable from quite different sources. For example, the presupposition of a *wh*-question such as 'Who killed Duncan?' is simply the proposition that one arrives at by replacing the *wh*- element by an existential quantifier: '*Someone* killed Duncan.' No downgrading can be involved here. In this respect, though, presupposition is not different from other semantic relations like entailment and inconsistency: these also have diverse sources in semantic structure. In any case, since the term 'presupposition' has been notoriously difficult to define, it is scarcely surprising to find that no single explanation offers itself for the varied phenomena which have been brought within the scope of that term.

Three Kinds of Abstraction

One kind of presupposition for which no explanation has been given is that associated with PURE FACTIVES (p. 303). Such presuppositions are derived not from downgrading, but from subordination:

(21) Peter knows that Joan is rich.
(21a) (peter . KNOW^{+} . (joan : RICH^{+}))

(21a) seems the obvious way to analyse (21); and yet this must be the wrong way to represent pure factives, according to the analysis of (7b)–(7d) above. That analysis would lead to the following treatment of the negative of (21), and hence to the false conclusion that (21) entails, rather than presupposes, 'Joan is rich':

(22) Peter doesn't know that Joan is rich.
(22a) *(not^{+} : (peter . KNOW^{-} . (joan : RICH^{0})))

The chain of factuality, illustrated in (22a), belongs to conditional factives only. On the one hand, the analysis of (21a) and (22a) is inappropriate to pure factives like 'know' and on the other hand, it is inappropriate to non-factives like 'think', for which the positive proposition is as follows:

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(23) Peter thinks that Joan is rich.
(23a) (peter . THINK^{+} . (joan : RICH^{0}))

How shall we make sense of this problem of different kinds of factivity? I shall suggest that the explanation lies in the fact that subordinate predications can represent very different kinds of abstraction, according to the nature of the governing predicate. The following rough generalizations can be made:

(I) Predications governed by conditional factives refer to EVENTS or STATES.
(E.g. 'I heard *the postman knock*'; '*Rising costs* cause *unemployment.*')
(II) Predications governed by non-factives refer to PREDICATIONS.
(E.g. 'I conclude *that the building is unsafe*'; 'She wants *me to help you.*')
(III) Predications governed by pure factives refer to FACTS.
(E.g. 'I recognize *that school meals are important*'; 'It is a pity *that Jerry left.*')

Although we are concerned in (I)–(III) with what a predication *refers to*, some important distinctions of meaning are clearly involved. I shall now try to explain the difference between these three kinds of abstraction.

1. *Referring to Event-States*

Type (I), that of events or states, is the usual type of referent of a predication, but it is awkward to discuss because of an unfortunate lack of vocabulary. Although we have words in English for 'events', 'states', 'processes', 'actions', etc., we have no general word to cover all these kinds of phenomena. For this reason, I have resorted to an *ad hoc* compound EVENT-STATE, in which the two most general terms of this set are combined.

So far we have applied the notion of *reference* to arguments, rather than to whole predications. Nevertheless, it is a natural extension of the term to use it of predications, and the relation which obtains between predications and phenomena in the world. To see this, we need only compare the following:

I saw *the* bus/robbery on 42nd Street.
I saw *a* bus/robbery on 42nd Street.

The contrast between definite and indefinite reference is familiar and straightforward in the case of arguments such as 'the bus' which refer to concrete objects. But this contrast can also be made in the case of

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terms like 'the robbery', which clearly have the structure of predications rather than of arguments. In this case, we call the 'thing' referred to by the predication an event. 'The robbery' refers to an event just as 'the bus' refers to an object; and the whole main proposition 'I saw the robbery on 42nd Street' refers to two events, a seeing-event, and a robbing-event.

An event is an abstraction in that it is made up of simpler entities – those denoted by arguments and predicates. But in another sense, an event is not particularly abstract: you can point to events, just as you can point to people; you can place events in time and space, respond to them as sensory stimuli, etc. Following Lyons (1977, p. 443 ff.), we may call events SECOND-ORDER ENTITIES, and acknowledge that their mode of existence in the world is comparable with that of 'first-order entities' such as things and people. One further piece of evidence for this is that event-predications are like arguments in their tendency, under certain circumstances described on pp. 289–95, to be invulnerable to negation, and thus to be the source of existential presuppositions. Compare:

(24) I saw *the bank robbery.*
(24a) I didn't see *the bank-robbery.*
(25) I saw *a bank robbery.*
(25a) I didn't see *a bank-robbery.*
(26) I saw *the bank being robbed.*
(26a) I didn't see *the bank being robbed.*

From both (24) and (24a) the inference is drawn that the bank was robbed. But in (25) this inference is not drawn, because of the indefiniteness of the noun-phrase. The same applies (though less clearly) to (26), where an *-ing* clause replaces the noun-phrase as the object of *saw*: the definite article here determines 'the bank' rather than 'the robbery', and so does not affect the indefiniteness of the whole predication.

II. *Referring to Predications: Metalanguage*

Type (II) comprises a more abstract order of entities, which in the spirit of Lyons we may call 'third-order entities'. These are predications – or what we may more informally call thoughts, ideas, notions. Unlike event-states, they exist solely in the mind, so that when we say 'Peter thinks *that Joan is rich*', what Peter thinks is itself a mental phenomenon – in this case a proposition.

There is something mind-teasing about the idea of a predication referring to a predication, and so at this point, a digression on the metalinguistic function of language is necessary. Whereas in most instances the relation of *reference* holds between language and what is not language (e.g. the item 'hat' refers to an object which is a hat), there is apparently

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no restriction on the universe of things to which language may refer, and this means that it is possible for language to refer to language. Whenever we use language to talk or write about language, we use language in a *metalinguistic* function. Lexical items such as *word*, *syllable*, *sentence*, *question*, *negation*, etc., are examples of metalanguage: they are linguistic items which denote classes of linguistic items. It is worth noting that there are different *modes* of metalanguage, or ways of referring to objects identified at different levels of linguistic abstraction. For example, the word *word* is metalinguistic in a *syntactic mode* (because the word is a linguistic unit identified at the level of linguistic abstraction we call syntax); the word *syllable* is metalinguistic in a *phonological mode*; *proposition* is metalinguistic in a *semantic mode*. It is also important to distinguish between elements referring to a class of linguistic entities, and those naming an individual entity. The chief device of metalinguistic naming is direct quotation or citation of the entity referred to, as illustrated in sentence (27) below:

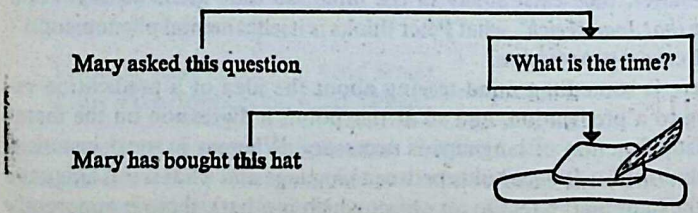
(27) Mary asked '*What is the time?*'
(28) Mary asked a *question*.

While the noun *question* in (28) refers to a whole class of linguistic entities, 'What is the time?' in (27) actually refers to one member of that class: namely, the question which consists of the four words *what*, *is*, *the*, and *time*, in that order. Therefore, (28) differs in meaning from (27) only in being more general – or, in terms of basic statements, we may say that (27) entails (28).

A similar contrast obtains between (29) and (30):

(29) Jacob knows the meaning of *Fräulein* and *Bier*.
(30) Jacob knows the meaning of two German words.

(Here quotation is signalled by italics, instead of by quotation marks). In such cases of direct quotation we may interpret the device of quotation as one of naming a referent by *demonstration*, in the same way as we may identify a referent by using the deictic word *this* accompanied by the physical gesture of pointing:



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The only substantial difference between the two cases is that the reference for the metalinguistic utterance is structurally incorporated within the utterance itself, as in sentence (27) above.

The difference between *direct quotation* and *indirect speech* is a difference of mode: direct quotation is in the syntactic (or sometimes phonological) mode, identifying the form (and hence indirectly content as well) of the sentence quoted, while indirect speech is in the semantic mode, identifying its content without specifying its form. Hence the following sentences are not true paraphrases:

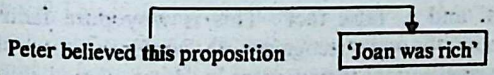
(31) Frank said 'I am enjoying my holiday.'
(32) Frank said that he was enjoying his holiday.

The difference between them is that in (31) the reporter commits himself to repeating the actual words spoken; but in (32) he does not. What Frank might actually have said was 'I'm really enjoying these two weeks in Zermatt' or simply 'I like it here', etc. In these cases (32) would be a true report, while (31) would not. Thus (31) entails (32), but (32) does not entail (31).

A proposition such as '(that) Joan was rich' can be governed either by a speech-act predicate, as in (33), or by a psychological predicate, as in (34):

(33) Peter said/claimed/insisted that Joan was rich.
(34) Peter believed/imagined/concluded that Joan was rich.

In both cases, however, the semantics of the *that*-clause is metalinguistic, in the sense that one proposition is used to refer to another. We may call (33) 'indirect speech quotation', and (34), analogously, 'indirect thought quotation'. This is a further example, then, of 'naming the referent by demonstration':



One major difference between references to events and to predications is that events exist in time and space and can be, as we have noted, objects of perception. Predications, on the other hand, are concepts rather than percepts, and can be divorced, spatially and temporally, from the event to which they refer. We notice this in the following contrast:

(35) I heard { a helicopter arriving. / the arrival of a helicopter.

(36) I heard that a helicopter { had arrived. / was arriving. / would arrive.

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In (35) 'heard' refers to actual physical perception of the arrival as an event; in (36) it is likely to refer to hearing the news of the arrival – possibly long after or before the arrival took place. Another difference is that (35) entails 'A helicopter arrived', while (36) does not.

III. *Referring to Facts*

Facts are distinct from event-states and predications, and yet they share the characteristics of both. A fact may be defined as an object of knowledge: something that is known. Like propositions, facts are typically referred to by means of *that*-clauses; and like propositions, too, they transcend particularities of time and place. In a sense, facts are eternal and omnipresent. We may say that a history book contains facts, but not that it contains events; so Julius Caesar's assassination both *was* and *is* a fact; as an event, however, it *occurred* at one point in time.

On the other hand, in their correspondence to reality facts align themselves with events rather than with propositions. A fact, indeed, can be regarded as a proposition whose factuality is guaranteed. It is on this basis that we may distinguish two interpretations of:

(37) I understood *that the deal was off.*

This sentence is ambiguous with respect to 'predication' and 'fact' interpretations. In the 'predication' sense, *I understood* means 'I had been told', while in the 'fact' sense, *I understood* roughly means 'I realized, I appreciated the fact that ...'. Only in the latter sense does (37) presuppose 'The deal was off', as is evident from the negative sentence:

(37a) I did not understand *that the deal was off.*

In the 'fact' sense, but not in the other, this implies 'The deal was off'. A fact, unlike a proposition, cannot be denied; there is no distinction between a 'true fact' and a 'false fact'. This is why pure factive predicates, such as 'know', 'be odd', 'recognize', etc., confer the status of a presupposition on the predications they govern:

(38) 'Jim realizes (*the fact*) *that Ann loves him*' presupposes 'Ann loves him.'

(39) 'I noticed (*the fact*) *that the bus had left*' presupposes 'The bus had left.'

Here we notice, also, that the phrase 'the fact' can often be inserted as a visible marker of this category. The contrast between 'fact' and 'event' can be seen in the comparison between (39) and (40):

(40) 'I noticed *the bus leaving.*'

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Conclusion

The markers of factuality (+, 0, −) were introduced earlier to account for the inferences we make about the content of subordinate predications. I am now suggesting that, at a more abstract level, many of these inferences are determined by a classification of subordinate predications into three types: those referring respectively to event-states, predications, and facts. The following table summarizes the correlations which have been illustrated:

GOVERNING PREDICATE	*LOGICAL RELATION*	*ABSTRACTION-TYPE*
A. conditional factive	entailment	event-state
B. pure factive	(*potential*) presupposition	fact
C. non-factive	—	predication

[By 'logical relation' is meant the relation between the main proposition and the subordinate proposition.]

It should be emphasized, however, that the table may not be interpreted too absolutely. Some cases which it does not account for have already been mentioned: for example, presuppositions, even those introduced by pure factives, are subject to cancellation; and on the other hand, presuppositions are derived not only in the case of facts, but in some cases of event-states. Thus categories A and B produce exceptions in both directions. As for category C, there are also problems involving presupposition here. The main question is: can one assume that something which has presuppositional status within the subordinate predication also has presuppositional status within the main predication? Or put more simply, is the presupposition of the part also a presupposition of the whole? This is the so-called PROJECTION PROBLEM which has attracted much controversy in recent semantics. Although I cannot go into this problem here, I shall at least suggest that the above distinction between the abstraction-types of event-state, fact, and predication is a useful step towards its solution.

This chapter has some implications for the semantic notation, Signese. In the first place, it introduces the factuality features +, 0, −, one of which must, for completeness, be assigned to each predication. In the second place, the notation should, I suggest, contain indicators of the three abstraction-types I, II, and III. For this purpose, different bracketings may be used: round brackets for *event-state* (); curly brackets for *fact* {}; and square brackets for *predication*, the case of a metalinguistic reference []. These contrasts are illustrated in:

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(peter . SEE^{+} . (jill : SLEEP^{+}))
'Peter saw Jill sleeping'
(peter . REMEMBER^{+} . {jill : SLEEP^{+}})
'Peter remembered that Jill was sleeping'
(peter . HOPE^{+} . [jill : SLEEP^{0}])
'Peter hoped that Jill was sleeping'

With the aid of these symbols, together with rules for negation explained in this chapter, it will be possible for factuality markers to be predicted by general rule from other properties of semantic representation, so that ultimately the aim accounting for basic statements will be fulfilled.

This chapter has examined the concept of 'factuality' as a means of accounting for otherwise puzzling data regarding the relations of entailment and presupposition in natural language. The quest for presupposition has now taken us into the study of non-propositional utterances, and so prepares us for the exploration of pragmatics and non-propositional semantics in the next chapter.

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16. Semantics and Pragmatics

Three Approaches to Pragmatics

In its most general sense, pragmatics studies the relation between linguistic expressions and their users. The use of the term generally implies a dichotomy between language *per se* – the language competence in the abstract – and the use that is made of that competence by speakers and hearers. The distinction between semantics and pragmatics, therefore, tends to go with the distinction between meaning and use, or more generally, that between competence and performance.

This is to anticipate, however, the debates surveyed in this chapter. Such debates on the relation of semantics to pragmatics have been prominent in the recent history of semantics. To a considerable extent, this focus of interest on pragmatics has been due to the influence of three philosophers – J. L. Austin, J. R. Searle and H. P. Grice – all of whom have in some way championed a pragmatic approach to meaning. In linguistics, too, there have been various challenges to the assumption that competence can be studied in separation from performance, and purely formal theories of languages, such as transformational grammar, have suffered from a backlash. Twenty years ago pragmatics, if it was mentioned at all, was regarded as a convenient waste-bin to which to consign annoying facts which did not fit theories. Now it is one of the more vigorous areas of linguistic research.

Semantics is the level of linguistics which has been most affected by pragmatics, but the relation between semantics (in the sense of conceptual semantics) and pragmatics has remained a matter for fundamental disagreement. The central issue is: is it valid to separate pragmatics from semantics at all? Three logically distinct positions in this debate can be distinguished:

(1) Pragmatics should be subsumed under semantics.
(2) Semantics should be subsumed under pragmatics.
(3) Semantics and pragmatics are distinct and complementary fields of study.

For ease of reference, I shall distinguish these three positions by the use of the following terms: (1) SEMANTICISM, (2) PRAGMATICISM, (3)

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COMPLEMENTARISM. In Chapter 14 I have already considered the implications of these three positions in one field – that of presupposition. My conclusion was that the explanation of presupposition required a 'division of labour' between semantics and pragmatics; in other words, I adopted a complementarist position. In this chapter, too, I shall argue for the complementarist position, which is probably the one most widely espoused in linguistics today.

At a very simple level, contention between the three positions above can be traced in an ambivalence in the everyday use of the verb *mean*. Of two major usages of this verb, one is bivalent ('*X* means *Y*') and one is trivalent ('*s* means *Y* by *X*'). For example:

(1) *Donkey* means 'ass'.
(2) When Miss Trotwood said *Janet! Donkeys!* she meant by this remark that Janet was to drive the donkeys off the lawn. (For this example, see p. 66).

The second example is clearly concerned with meaning not just as a property of language, but as a particular speaker's use of language in a particular context. It is this latter use of meaning which is pragmatic. The question is: is *meaning* (1) to be assimilated to *meaning* (2), or is *meaning* (2) to be assimilated to *meaning* (1), or is each *meaning* distinct from the other?

We may note about *meaning* (2) that

(i) it involves the speaker's intention to convey a certain meaning which may, or may not, be evident from the message itself.
(ii) Consequently, interpretation by the hearer of this meaning is likely to depend on context; and
(iii) meaning, in this sense, is something which is *performed*, rather than something that exists in a static way. It involves *action* (the speaker producing an effect on the hearer) and *interaction* (the meaning being 'negotiated' between speaker and hearer on the basis of their mutual knowledge).

The following then are outward criteria for judging whether a particular discussion of meaning takes us into the realm of pragmatics:

(a) Is reference made to addressers or addressees, or (as I shall prefer to call them, ignoring the speech/writing distinction) SPEAKERS OR HEARERS?
(b) Is reference made to the INTENTION of the speaker or the INTERPRETATION of the hearer?
(c) Is reference made to CONTEXT?

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(d) Is reference made to the kind of ACT or ACTION performed by means of or by virtue of using language?

If the answer to one or more of these questions is *yes*, there is reason to suppose that we are dealing with pragmatics.

Illocutionary Force

We begin with the last criterion, since it involves the other three. An exploration of the approach to meaning in terms of action can fittingly begin with the philosopher J. L. Austin (*How to Do Things with Words*, 1962). Austin was dissatisfied with the traditional concentration, in linguistic philosophy, on referential meaning and the truth and falsehood of statements. This led him away from the question of 'what do sentences mean' towards the question 'what sort of act do we perform in uttering a sentence'. This he called the *illocutionary* force of an utterance, distinguishing it from the *locutionary* meaning (roughly, the referential or cognitive meaning which had been the philosopher's traditional concern) and from the *perlocutionary* effect (what sort of function or fulfilment of intention is accomplished by the sentence). The illocutionary purport of an utterance is to be expressed in terms of what Austin called 'happiness' or 'felicity' conditions, rather than in terms of truth and falsehood. One linguist influenced by this approach, Charles J. Fillmore, has given, by way of illustration, the following conditions of 'happiness' or appropriateness for the simple imperative utterance *Please shut the door*:

(i) The speaker and the addressee of this sentence are in some kind of relationship which allows the speaker to make requests of the addressee.
(ii) The addressee is in a position where he is capable of shutting the door.
(iii) There is some particular door which the speaker has in mind and which he has reason to assume the addressee can identify without any further descriptive aid on the speaker's part.
(iv) The door in question, is, at the time of utterance, open.
(v) The speaker wants that door to become closed.

We can see that the violation of any of these conditions would cause the utterance to be in some sense 'unhappy' or inappropriate.

One way of looking at presuppositions is to regard them as such 'happiness conditions'. In fact, conditions (iii) and (iv) above (and possibly also condition (ii)) are identifiable as presuppositions in the treatment of presupposition I have given. But conditions (i) and (v) are illocutionary in a narrower sense: they are circumstances which enter into the

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definition of what it is to perform a speech act of a particular sort, in this case a request. We may call such conditions *speech-act conditions*. One can imagine laying down similar conditions for other kinds of speech act, such as statements, questions, promises, warnings, apologies, etc. For a question to be 'felicitous' for instance, at least the following speech-act conditions must obtain:

(a) There is a piece of information (X) of which the questioner is ignorant.
(b) The questioner wants to know (X).
(c) The questioner believes that the addressee knows (X).
(d) The questioner is in a position to elicit (X) from the addressee.

Generally the illocutionary force of an utterance is not made explicit by the utterance itself; but a notable class of exceptions to this rule includes such sentences as:

I do. (uttered at a marriage ceremony)
I name this ship *Queen Elizabeth*. (said when smashing a bottle against the bows)
I give and bequeath my watch to my brother. (in a will)
I bet you sixpence it will rain tomorrow.

These sentences (Austin's own examples) illustrate the class of utterances Austin calls *performatives*; that is, they are utterances which themselves describe the speech act which they perform. Performatives look like statements syntactically, but as Austin points out, they differ from most statements in that they cannot (easily) be declared false. Thus if speaker *A* says 'I declare that King Charles II was a coward' and speaker *B* replies 'That's false', he seems to deny not the performative utterance, but the proposition that it contains, namely, 'That King Charles II was a coward.'

The characteristic syntactic markers of a performative sentence are the following:

(I) The subject is in the first person. (*I* or *we*)
(II) The verb is in the simple present tense. (*state*, *ask*, *pardon*, etc.)
(III) The indirect object, if one is present, is *you*.
(IV) It is possible to insert the adverb *hereby*.
(V) The sentence is not negative.

All these characteristics are realized in:

I hereby declare to you my innocence.

But not all verbs referring to speech events can function as performative verbs, as we gather from the 'infelicity' of these sentences:

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*I hereby remark that the weather is cloudy.
*I hereby persuade you to eat fish in Lent.
*I hereby denigrate your parents.

Performatives are problematic semantically because for every non-performative sentence it is possible to find one or more performative equivalents. Thus one can maintain, with Austin, that the only difference between *I order you to go!* and *Go!* is that the former is explicitly performative, while the latter is implicitly so. The problem is, how do we give an account of the quasi-equivalence of these utterances – a matter to which I shall return shortly.

Austin's study of speech acts and performatives was taken further and systematized by his pupil J. R. Searle (*Speech Acts*, 1969), who went so far as to claim that 'a theory of language is part of a theory of action' (*ibid.*, p. 17). That is, Searle in a sense regarded the whole of linguistics as pragmatics. It is not surprising, then, that he conceived of meaning in pragmatic terms: 'the study of the meanings of sentences and the study of speech acts are not two independent studies but one study from two points of view' (*ibid.*, p. 18). Searle's speech-act theory may be regarded as an example of the trend I earlier called 'pragmaticism': the assimilation of semantics to pragmatics. A more extreme pragmaticist approach is that of W. P. Alston (1964).

The Performative Analysis

Almost at the same time as the publication of Searle's *Speech Acts*, a parallel development in the study of performatives took place within transformational grammar. Although clearly influenced by Austin and Searle, the *performative analysis* (or *performative hypothesis*), as it may be called, was actually an example of the opposing tendency of SEMANTICISM: the incorporation of pragmatics into semantics. This was in the heyday of *generative semantics* (see p. 346), when it was optimistically assumed that all factors relevant to the meaning of sentences could be included in their deep structure.

The gist of the performative analysis is that in its 'deepest structure' (which we may consider either its syntactic 'deep structure' or its semantic representation), every sentence is a performative; that is, every sentence contains as its main subject a first-person pronoun, and as its main verb a performative verb in the simple present tense. For example, the declarative sentence *Tomorrow will be rainy* has, in this view, a deep structure of a form such as *I state that* [*tomorrow will be rainy*] or *I predict that* [*tomorrow will be rainy*], or *I warn you that* [*tomorrow will be*

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rainy]. Questions and commands are given a similar deep structure analysis:

Open the door. ← I command you [to open the door].
How much are those bananas? ← I request of you that [you tell me [how much those bananas are]].

The advantages of the performative analysis were argued persuasively by J. R. Ross in his article 'On Declarative Sentences' (1970). He pointed out that main clauses have many things in common with clauses which are indirect statements, indirect questions, etc. For example, the emphatic reflexive pronoun is acceptable in sentences (3) and (4) below, but not in sentence (5):

(3) Tom believed that the paper had been written by Ann and *himself*.
(4) The paper was written by Ann and *myself*.
(5) * The paper was written by Ann and *himself*.

If we accept the performative analysis, then all direct statements come to be seen as indirect statements, and therefore a single syntactic condition can explain two sets of circumstances which would otherwise require independent explanation for direct speech and indirect speech. In the case of (3)–(4) above, the main circumstances observed are that the co-ordinated emphatic reflexive pronoun either (a) must be in the first person if it occurs in the main clause; or (b) must agree with the noun phrase of the higher clause if it occurs in a subordinate clause. But by the performative analysis, (a) becomes a special case of (b), and so need not be stated as a separate condition. If we insert the performative clause *I state that* ... in (4) and (5), condition (b) is fulfilled in (4) but not in (5); hence (5) is ungrammatical.

Ross adduces many other arguments of the same kind, and I shall only mention one more of them here. The phrase *As for ... self* obeys the same sort of general rule as was illustrated above for coordinated emphatic reflexives: namely, that *myself* (or *ourselves*) occurs in main clauses, while in indirect speech, there occurs a pronoun in agreement with a noun phrase in the higher clause:

(6) Tom declared that as for *himself*, he was ravenous.
(7) As for *myself*, I am ravenous.
(8) * As for *himself*, Tom is ravenous.

Again, if we adopt the performative analysis and analyse (7) in depth as *I state that as for myself, I am ravenous*, the same rule that accounts for the acceptability of (6) accounts for the acceptability of (7) in contrast to (8).

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Ross's analysis also explains the semantic equivalence, or virtual equivalence, between an ordinary statement like *Tomorrow will be rainy* and a corresponding performative like *I state to you that tomorrow will be rainy*. The difference between these, in the analysis, is simply that a transformational rule of *performative deletion* has applied to the former sentence, pruning away from the front of it the subject, performative verb, and indirect object.

Although it did not escape criticism (see especially Matthews, 1972), the performative analysis found widespread support among transformationalists. Nowadays, this support has all but disappeared. Performative sentences are so rare, that it seems highly unnatural to argue that every single direct statement is fundamentally an indirect statement, that every direct question is fundamentally an indirect question, etc. The unnaturalness grows distinctly suspicious when we consider that a discourse will generally have the same deep structure performative for each sentence it contains. So a newspaper report consisting of a hundred sentences will have 'I report that ...' or some such performative clause repeated a hundred times. The objection becomes more substantial (as Ross himself points out) when we apply performative analysis to texts belonging to impersonal styles of discourse in which first and second pronouns are taboo (for example, in legal documents, regulations, bureaucratic instructions). Here the performative analysis forces us to allow first-person and second-person pronouns in the underlying structure of a sentence, but not to allow them in its surface structure.

There is an additional case, noted by Ross (1970, p. 255), where the performative analysis gets into difficulties:

(9) As for myself, I promise you that I'll be there.

This sentence already contains an overt performative clause *I promise you* ..., and yet the phrase *As for myself*, according to an argument mentioned in connection with examples (6) to (8), points to a higher performative clause within which *I promise you* is embedded. But this violates another rule which Ross finds it necessary to establish: that no performative can be embedded in another performative. In any case, to suppose that a double performative *I state to you that I promise you* underlies this sentence is to open the door to potential infinite regression of performatives, one within the other:

I state that *X*.
I state that I state that *X*.
I state that I state that I state that *X* ...
(etc.)

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If this sort of embedding is allowed, then every simple sentence can be derived from infinitely many deep structures.

Situation of Utterance

Ross himself proposed an alternative to the performative analysis, which he called the 'pragmatic' analysis. The outline of the 'pragmatic analysis' is that the subject and performative verb and indirect object are (in Ross's phrase) 'in the air' – that is, they belong to the extra-linguistic context of the utterance rather than to its actual structure. Ross saw some advantage in the pragmatic analysis (notably that it resolves the difficulty of sentence (9) above), but saw no way of giving it formal status within transformational grammar.

Since for me the pragmatic analysis offers hope of an attractive common-sense alternative to the performative analysis, I shall now attempt to do what Ross declined to do – to give a reasonably precise characterization of what it means for elements of a speech act to be 'in the air' instead of being part of the underlying structural representation of a sentence. For this purpose, I shall propose that each speech act takes place in a *situation of utterance*, and that a situation of utterance includes:

(a) the utterance itself *U*
(b) the speaker/writer of the utterance *s*
(c) the hearer/reader of the utterance *h*
(d) the speech act *A*

(One might wish to extend the specification of a situation of utterance to include two further factors: (e) the place of utterance; (f) the time of utterance.) The utterance itself can refer to aspects of the situation of utterance by means of deictic items (p. 67) such as *this*, *now*, *here*. In addition, first- and second-person pronouns are defined as referring to participants in the speech act. Other linguistic elements referring to the situation of utterance are performative verbs, which, when used in the present tense (referring to the time of utterance) refer to the speech act itself. Hence we always have the ability, if we so wish, to describe overtly the situation of utterance in which we have the role of speaker, by using a performative such as *I declare to you that X*, in which speaker (*I*), speech act (*declare*), hearer (*you*) and utterance (*X*) are named in that order.

However, it is a general principle of conversation (see Grice's Maxim of Quantity – p. 296) that a speaker does not bother to describe aspects of the extra-linguistic situation which are obvious to himself and to the hearer. (This principle is manifest in example (2) *Janet! Donkeys!* – for further examples, see p. 66.) The same principle of least effort explains

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why, in general, we do not specify the implicitly known features of an utterance situation by the use of a performative clause. In fact, when we do use a performative (for example, *I order you to leave*; *I promise to pay you*) often it is precisely in order to make explicit the illocutionary force which might otherwise not be appreciated. For example, if I say *I promise to pay you tomorrow* I make it clear that I am committing myself to a future course of action, whereas this reassurance might or might not be evident in the non-performative *I'll pay you tomorrow*.

We are now in a position to see how the 'pragmatic analysis' matches the performative analysis, and also has some advantages of its own. First of all, let us consider how the pragmatic analysis explains the asymmetry in examples like (3)–(5) and (6)–(8). The point to notice is that examples like

(6) Tom′ declared [that as for himself′, he′ was ravenous].

are indirect speech sentences, in which (as we saw on p. 315) the speech-act predicate governs a metalinguistic predication:

(6a) (tom′. DECLARE. [he′: RAVENOUS])

So to make the generalization about (6) and (7) in pragmatic terms, we simply say: for any predication containing 'As for *x*self', the '*x*self' must refer to the speaker of the speech situation in which this occurs. In (6) the speaker is explicitly named as 'Tom', so this is a case of coreference to the subject of the speech-act verb; in (7) the speaker is the 'I' implicit in the situation. To make the matter clearer, we may distinguish between the *primary* situation of utterance (the one which is implicit) and the *secondary* situation of utterance (the one referred to in the primary situation), and say that in (6) the '*x*self' occurs within a secondary situation of utterance, and therefore refers to the speaker of the secondary situation; whereas in (7) the '*x*self' refers to the speaker of the primary situation.

This generalization works as far as it goes, but does not apply to all cases. For example, in:

(3) Tom believed [that the paper had been written by Ann and himself].

there is no secondary situation of utterance. On p. 315, however, we noticed the parallel between indirect speech quotation, and direct thought quotation: it is the latter that is illustrated in (3). So to make the generalization work for all relevant cases, we should extend the rule so that it applies not only to utterance situations, but to 'thought situations':

Utterances containing the emphatic reflexive '*x*self' are grammatical

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in cases where '*x*self' refers to the speaker/thinker of the utterance/thought situation in which it occurs.

In this way we show that the pragmatic analysis can capture the generalizations made by the performative analysis, by formulating them in terms of situation of utterance/thought, rather than in terms of syntactic or semantic constituent structure.

The parallel between (3) and (4), (6) and (7) is obvious so long as we remember that the elements of the primary situation are implicit ('in the air', in Ross's phrase), whereas those of the secondary situation of utterance are explicitly referred to in the main predication ('Tom declared that ...' etc.). What is special about performatives is that, in them, it is the primary situation that is explicitly described; or to put it another way, the secondary situation and the primary situation are identical. This means, in turn, that 'I declare that' in (7a) simply makes explicit elements of the situation of utterance implicit in (7):

(7) As for myself, I am ravenous.
(7a) I declare that, as for myself, I am ravenous.

By this common-sense type of analysis, then, we arrive at the conclusion that (7) and (7a) are pragmatically equivalent (except that the nature of the speech act is covert in (7) and overt in (7a)), and that this equivalence applies to all similar cases of performatives and their non-performative analogues. Thus the pragmatic analysis can dispense with the performative-deletion transformation, which is a necessary part of the performative analysis.

Another advantage of the pragmatic analysis in terms of situation of utterance is that it does not come to grief over utterances like:

(9) As for myself, I promise I'll be there.

Whereas the performative analysis has to postulate a double performative here, the pragmatic analysis simply allows *myself* in (9) to refer to the (implicit) speaker of the primary situation. No additional performative such as '*I state that* as for myself ...' need be posited.

Performatives and Illocutionary Force

Taking stock of the preceding discussion, we may now distinguish three points of view on performatives and illocutionary force. First, the speech-act analyses of Austin and (more particularly) of Searle favour what I have called the *pragmaticist* position in that they define meaning by reference to felicity conditions, or contextual conditions for the performance of illocutionary acts. From this viewpoint, performatives are

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highly significant as utterances which, as it were, wear their illocutionary hearts on their sleeves: the performative verb as an 'illocutionary force indicating device' is an explicit expression of something which is assumed to be implicit in other, non-performative utterances. Second, the performative analysis of Ross and others is representative of what I have called the *semanticist* position. Although this is the opposite camp from pragmaticism, in practice it shares with Austin and Searle a conviction that performatives are crucially important in being the overt expression of the underlying illocutionary meaning implicit in other sentences. In hindsight, we can perhaps say that the performative analysis was an attempt to incorporate situational factors into grammar, and could only have been seriously entertained by linguists whose view of language and meaning excluded pragmatics.

What Ross calls 'the pragmatic analysis', on the other hand, is, in spite of its name, representative of the *complementarist* position. According to this analysis, performatives are analysed semantically as ordinary declarative sentences. They express, in fact, a rather unusual kind of indirect-speech proposition: one in which the speaker reports his own speech act. But it is only through pragmatic analysis in terms of situation of utterance that the special, self-referring nature of performatives becomes clear. That is, pragmatics and semantics are both necessary to the explanation of performatives.

It is safer to say, as with presuppositions (Chapter 14), that in semantics there are no performatives: there are only *potential* performatives. A sentence with the syntactic properties of a performative (first person subject, present tense verb, etc.) can be interpreted either as referring to a single present event, or as referring to a present habit consisting of repeated events; only in the former interpretation is the sentence construed as a performative. This ambiguity is detectable in:

(10) I declare the meeting open

which could be interpreted as a performative: (= 'I hereby declare the meeting open') or as non-performative:

(11) *A*: Mr President, what is the first thing you do at an Annual General Meeting?
B: I declare the meeting open.

But needless to say, in most cases the performative or non-performative interpretation is perfectly clear from the context.

At this point it is advisable to make a distinction between SENTENCES and UTTERANCES. Sentences belong to the language system, as do their meanings as propositions, questions, etc. But when we come to prag-

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matics we discuss the meaning of *sentences in particular situations*, and these less abstract linguistic objects may be called UTTERANCES. It can now be seen that what I have so far rather neutrally called 'performatives' are actually 'performative utterances' rather than 'performative sentences'; that is, performatives are identified as being performatives in pragmatics. At the same time, we recognize that it is by virtue of the ordinary semantic interpretation of such utterances as a special kind of indirect speech quotation that the performative interpretation is arrived at.

The complementarist 'pragmatic' analysis differs from the traditional analysis of performatives in one substantive detail. Where Austin and others have denied that a performative can be deemed false, the pragmatic analysis says that a performative is semantically just a special type of indirect speech proposition, and therefore may be deemed true or false like all regular propositions. The difference, in this view, between performatives and non-performatives is a pragmatic one: namely, that a situation in which the truth of a performative can be reasonably challenged rarely arises. For example, it is a required condition of a promise, in Searle's analysis, that the speaker has the intention to carry out the envisaged action. Hence 'I promise to be there' is rather like 'I have a pain in my big toe' in that no one except the speaker can know it to be false. But it does seem possible to deny a performative in cases where the thing promised is utterly impossible to perform: e.g. 'I promise to make you the first female prime minister of the U.K.' (uttered in 1980), or in cases where other conditions for the performance of an illocutionary act are not present:

A: I pronounce you man and wife.
B: Oh no you don't – being neither a minister of religion nor a registrar of marriages, you are not qualified to do so.

If such examples seem far-fetched, notice that potential performatives can be negated:

(12) I do not promise to be there, but I'll do my best

and surely this must indicate that if a negative performative is true, a corresponding positive performative must be false. Performatives do not, we conclude, belie their logical function: they look exactly like declarative sentences, and they are such. It seems that those who have argued the non-propositional nature of performatives have overhastily drawn this conclusion about their anomalous logical status from the fact that, pragmatically, they are almost inevitably self-fulfilling. Thus with per-

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formatives, as with presuppositions, it is the complementarist position that prevails.

Conversational Implicature

For the remainder of this chapter I shall pursue the complementarist position further, and this means that I shall find it useful to make a distinction between the SENSE of an utterance (its conceptual or logical meaning) and its FORCE (or more fully, its ILLOCUTIONARY force). It is the task of a semantic model to account for the former, and the task of a semantic model allied with a pragmatic model to account for the latter.

In performatives, the marriage between semantics and pragmatics is a very unequal one: the force of the utterance is explicitly given as part of its sense, so that need for a complementary model of pragmatics is not evident. But there are other, perhaps more typical cases where the gap between sense and force is wider, and where pragmatics has a good deal to explain. Consider:

(13) Is that your coat on the floor?
(14) Waiter, there's a fly in my soup.

Both of these are likely to have a force which is a mixture of a complaint and a directive. If a parent asks a child (13), it is not likely to be just a request for information, but an utterance whose purport might be roughly expressed as follows: 'If that is your coat on the floor, I am displeased with you for leaving it there, and I want you to pick it up.' If a customer says (14) to a waiter, he is not just passing on some gratuitous information, but may well be implying something like this: 'I am outraged at the standards of this restaurant, and you'd better hurry and bring me a new bowl of soup, or else ...' Of course, intonation has an important semantic role here; but the main point is that there is a clear discrepancy between what the sentence *says* and what the speaker of the sentence intends the hearer to understand by it.

It may seem that the relation between sense and force is unsystematic and infinitely variable according to context. To some extent, we must acknowledge this. But a promising approach to pragmatic explanation is offered by H. P. Grice in his 'Logic and Conversation' (1975). As we have already noted (pp. 296–7), Grice argues that certain aspects of conversational behaviour cannot be accounted for unless we assume that (i) people are cooperative, and that (ii) people assume that other people are cooperative. He therefore proposes a Cooperative Principle, which I shall from now on abbreviate to CP. He also proposes that, under

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this general principle, a number of distinct MAXIMS are subsumed. Four categories of maxims are distinguished:

QUANTITY: Give the right amount of information; i.e.
1. Make your contribution as informative as is required.
2. Do not make your contribution more informative than is required.

QUALITY: Try to make your contribution one that is true; i.e.
1. Do not say what you believe to be false.
2. Do not say that for which you lack adequate evidence.

RELATION: Be relevant.

MANNER: Be perspicuous; i.e.
1. Avoid obscurity of expression.
2. Avoid ambiguity.
3. Be brief (avoid unnecessary prolixity).
4. Be orderly.

[Adapted from Grice (1975, pp. 45–6).]

In claiming that these maxims are ordinarily observed, Grice is interested in explaining why utterances often seem to mean more than they say. His contention is that only if we assume that people are trying to be cooperative in these ways can we work out how a given utterance is intended, and interpreted, in a particular way. Take, for example, this dialogue (cf. Clark and Clark 1977: p. 122):

(15) *A*: I saw Mr X having dinner with a woman yesterday.
B: Really? Does his wife know about it?
A: Of course she does. She was the woman he was having dinner with.

B has reason to feel cheated, deliberately misled, by *A*. From *A*'s opening remark *B* has reasonably drawn the conclusion:

(16) 'The woman Mr X was having dinner with was not his wife.'

If we ask *why B* has drawn this conclusion, it is plausible to suppose him to have argued roughly as follows:

(17) *A* has stated that Mr X was having dinner with a woman. *A* has withheld the identity of the woman, thereby giving less information than is desirable. Therefore A appears to be breaking the Maxim of Quantity. But *A* is observing the CP, I assume. Therefore *A* will not break the Maxim of Quantity unless, by doing so, he can uphold the CP at a deeper level. This will be the case if *A* does not know the identity of the woman concerned, for to specify the identity of a woman when you do not know who she is is to break the Maxim of Quality

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('Do not say that for which you lack adequate evidence'). Therefore *A* does not know the identity of the woman. But it is unlikely that *A* does not know the wife of Mr X; therefore I conclude that (16).

It is to conclusions like (16) that Grice gives the name CONVERSATIONAL IMPLICATURE. Such inferences, it will be noted, are arrived at on the basis of

(a) The conventional conceptual meaning of the utterance.
(b) The assumption that the speaker is observing the CP, and is assuming the hearer to assume that too.
(c) Relevant background knowledge.
(d) Informal reasoning.

Two points to note about this explanation in terms of the CP are (i) it is assumed that the relation between sense and force is not arbitrary, but can be 'worked out' rationally, on the basis of (a)–(d); (ii) the maxims are not absolute rules: they can be flouted, they can conflict with one another, and the speaker can decide to uphold the one at the expense of another, as when, in (17) above, *A* is assumed to uphold the Maxim of Quality at the expense of the Maxim of Quantity. This preference can be exercised within the ambit of the CP; yet there is the further possibility that the speaker may take a more drastic step of abandoning the CP – of not being cooperative at all. Only on this basis could we understand *A*'s second remark in (15), a joke at *B*'s expense. We have already noted (p. 295) the crucial property of implicature – that it can be cancelled by contradictory information – and this cancellation of implicature is illustrated in (15), when *B*'s second remark cancels the implicature (16).

Here are two more examples of how implicatures can derive from the breaking of maxims of the CP:

(18) *A*: Someone's eaten all the chocolates.
B: Well, I like that!
(19) *A*: Where's my box of chocolates?
B: The children were in your room this morning.

[Example (19) is from Smith and Wilson (1979, p. 175).]

In (18), the remark *I like that* will almost certainly implicate its negative: 'I don't like that.' This kind of implicature, to which the name 'sarcasm' or 'irony' is given, involves a breach in the Maxim of Quality, in that the speaker does not tell the truth. In (19), on the other hand, there is an apparent breach of the Maxim of Relation, since there seems to be no conversational connection between the contributions of *A* and *B*. Clearly a relevant response to *A*'s question would be a proposition

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informing *A* where the chocolates are. The fact that *B* does not give such a reply implicates that *B* does not know where the chocolates are; and moreover, the fact that *B* says 'The children were in your room this morning' in this context implicates that *B* thinks the children may be guilty of removing or eating the chocolates.

Indirect Illocutions

Grice's account of implicature gives insight into both the difference and the connection between sense and force; but in Grice's own treatment, it is largely restricted to propositional meaning. An apparently different kind of relation between 'said' and 'implied' meaning arises in types of utterance which have been termed INDIRECT ILLOCUTIONS; e.g.:

(20) Could you speak more slowly?
(21) I wonder if you'd pass me that hammer.
(22) Did you know that Mr Potts is resigning?
(23) Have you any idea what the time is?
(24) Why don't you sit down?

In such cases, an utterance seems to have two illocutionary forces, such that (in Searle's words, 1975a, p. 60) 'one illocutionary act is performed indirectly by way of performing another'. Thus (20) could be described as 'a directive performed by way of asking a question' (cf. *Speak more slowly*); (21) as a directive performed by way of a statement; (22) as a statement performed by way of a *yes–no* question (cf. *Mr Potts is resigning*); (23) as a *wh-* question performed by way of a *yes–no* question (cf. *What is the time?*); and (24) as a directive performed by way of a *wh-* question. The permutations are numerous.

From both the pragmaticist and the semanticist points of view the dual meaning of these utterances is a vexing problem. In the one case, we have to say that there are two illocutionary forces, but one is somehow derived from the other. Searle (1975a) proposes to account for this derivation by modifying Grice's concept of conversational implicature. In the other case, the performative hypothesis has to be stretched to accommodate derivation of a single sentence from two very different deep-structure performatives. For example, (20) would need to be derived on the one hand from a deep structure like:

(20a) I (hereby) ask you [whether you could speak more slowly]:

and on the other hand from a deep structure like:

(20b) I (hereby) request you [to speak more slowly].

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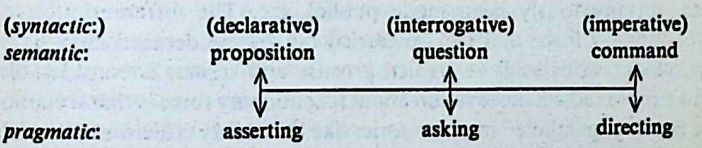
From the complementarist point of view, on the other hand, the duality of meaning, as a distinction between sense and force, is already accepted; but explanations must now take care of the fact that in some cases the relation between sense and force is relatively direct and in other cases relatively indirect.

Indirectness of the relation between sense and force is, as we shall see, a matter of degree. But let us first take a simplified view of this relation, by considering the three sentence-types of declarative, interrogative, and imperative. These are syntactic categories, whereas the corresponding semantic/logical categories are: PROPOSITION, QUESTION, and COMMAND. To these we now add three corresponding categories of illocutionary force: ASSERTING, ASKING and DIRECTING. (The labels are not in themselves important, but it is important to keep the levels separate, and therefore to use different terminologies.) Now we can draw a diagram displaying the three sentence categories and the three levels as follows:



On the diagram, any connection involving horizontal movement is an indirect one. It is seen (leaving aside the syntactic categories) that the relation between, for example, a proposition and the act of asserting is relatively direct, whereas that between, for example, a proposition and the act of asking is relatively indirect. From the speaker's point of view, this means that the most obvious and available way to assert something is by means of a proposition; and from the hearer's point of view, that the most neutral or unmarked interpretation for a proposition is to have the force of assertion. But the following examples of indirect illocutions show that all possible combinations involving horizontal movement on the diagram occur:

(25) I'd like to know your name, please. (asking by proposition)
(26) You can type this letter for me. (directing by proposition)
(27) Is that my fault? (asserting by question)
(28) Will you open the window? (directing by question)
(29) Tell me what's the matter. (asking by command)
(30) Note that this ticket is non-transferable. (asserting by command)

The illocutionary labels that have been supplied here, however, are extremely general, and a more delicate study of illocutionary force would

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make finer distinctions. Even a moderately thorough pragmatic analysis would need to subdivide asserting, for example, into such actions as promising, predicting, warning, reporting, pronouncing. 'Assertion' on its own, in Searle's analysis (1969, p. 66), means simply that:

1. *S* has evidence (reasons, etc.) for the truth of *p*.
2. It is not obvious to both *s* and *h* that *h* knows (does not need to be reminded of, etc.) *p*.
3. *S* believes that *p*.
4. The speech act counts as an undertaking to the effect that *p* represents an actual state of affairs.

[where *s* = speaker; *h* = hearer; and *p* = a proposition.]

It is not difficult to see how we could add to this very general definition of assertion the distinguishing marks of predicting (in which *p* refers to a future event-state), or of reporting (in which *p* refers to a present or past event-state), or of announcing (in which *p* is something which has not previously been made public), etc. The differentiation of illocutionary force that can be carried out by the detailed analysis of speech-act verbs such as *predict*, *promise* and *request* is considerable. But a more radical observation about illocutionary force is that it cannot be neatly pigeonholed into categories like these. (My criticism of Searle's speech-act analysis, with its emphasis on performatives as indicators of illocutionary categories, is precisely that it encourages such pigeonholing.) We have to account for various kinds of illocutionary indeterminacy.

The first kind of indeterminacy is this: illocutionary force is very often a matter of degree rather than kind. For example, we might agree that 'TELLING' someone to open the door and 'REQUESTING' someone to open the door are different kinds of directive, in that 'requesting' allows the hearer the option of refusal, whereas 'telling' does not. But in practice, this distinction is scalar:

(31) Shut the door.
(32) Will you shut the door?
(33) Can you shut the door?
(34) Could you shut the door?
(35) I wonder if you'd mind shutting the door? etc.

It is difficult to say at what point a 'telling' or an order shades into a request. The fact is that the more polite you are in making a directive, the more you give the hearer a chance to refuse. In this respect, for example, (33) is slightly more diplomatic than (32), since in theory at

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least the respondent to (33) can fail to comply (on grounds of inability) without being impolite.

A second kind of indeterminacy is that illocutions are often deliberately ambivalent, sharing the characteristics of more than one illocutionary type. A tag question is a good example:

(36) You will come, won't you?

The force of the assertion (which allows the hearer no come-back) is softened by the following question (which allows him at least some chance of saying 'No'), so that the whole utterance can play the role of a pressing invitation. Or the indeterminacy may be less evident in syntactic form, and be a matter of strategically balancing one interpretation against another:

(37) Why don't you take your sleeping pill?

Is this a piece of advice, a request, an order? Only the tone of voice used by the speaker would allow us to decide, for example, whether (37) is meant as a piece of helpful advice, or as an impatient instruction given by someone determined to get a good night's sleep. In studying illocutionary force, we must not overlook such subtleties, just because they do not fit into neat categories.

A third kind of indeterminacy is the one we have already touched on in talking about the 'duality of meaning' of indirect illocutions. The particular point about examples like (27) and (28) is that they are not ambiguous in the sense of being *either* an assertion *or* a question, *either* a directive *or* a question:

(27) Is that my fault? (28) Will you open the window?

Rather, we should say that it is *by virtue* of being a question of a particular kind (a so-called 'rhetorical question') that (27) succeeds in having the effect of an emphatic assertion – it challenges, so to speak, the hearer to deny what must appear patently undeniable. Similarly, it is *by virtue* of being a question of a certain kind (a question about the hearer's willingness to do something) that (28) succeeds in being a more polite variant of a command. Such utterances often take on some of the syntactic characteristics of their indirect pragmatic function; for example, (28) resembles a command in permitting the insertion of a medial *please*: *Will you please open the window?* But it would be totally undiscriminating to say that they are merely different ways of saying 'That is not my fault' and 'Open the window.' They keep their question-like character, even while they are interpreted as having an assertive or directive force.

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This leads on to another requirement to be made of a model of the sense–force relation. It is clear that some generalizations can be made about this relation, even when it is indirect, and that such generalizations are not arbitrary. For instance, Gordon and Lakoff (1971) venture the rule that 'One can convey a request by (a) asserting a speaker-based sincerity condition or (b) questioning a hearer-based sincerity condition.' In this way they would account, for example, for the fact that *Will/Can you open the door?* is an acceptable request, as also is *I want/I'd like you to open the door*. But we may reasonably ask why this generalization (in the main) is a correct one, as opposed to the following conceivable, but false generalization: 'One can convey a request by (a) asserting a *hearer*-based sincerity condition or (b) questioning a *speaker*-based sincerity condition.' Such a generalization would wrongly predict that the following are possible requests in English: *You will open the door*; *Would I like you to open the door?* The answer to this problem, fairly obviously, has to do with politeness. In all illocutions involving the transfer of benefits from one person to the other (and directives, including requests, are chief among them) there is a basic asymmetry between the speaker's and the hearer's role. This is reflected, for example, in the fact that *I will lend you my car* (a promise or an offer) is polite in comparison with *You will lend me your car* (a brusque order), although semantically speaking the only difference between these two utterances is the substitution of a second-person for a first-person subject.

Both Grice, in his account of conversational implicature, and Searle, in his account of indirect illocutions, allude to politeness as an important factor omitted from their analyses. To conclude, therefore, I propose that the most promising approach to indirect illocutions is to extend Grice's concept of conversational implicature to include other principles, apart from the CP, and in particular to include a Politeness Principle. We can then include in our account of pragmatics not only what means exist in a given language for making particular illocutionary acts (as a foreign phrase book of English might include them), but an explanation of why it is that certain semantic types of structure are appropriately used for particular illocutionary purposes. Thus the interpretation of a question such as *Will/Can you open the window?* as a polite request might be roughly spelt out, in terms of Gricean implicature, as follows (cf. Searle 1975a):

(38) *S* has asked me whether I am willing/able to perform *X*. This question, interpreted most directly as a request for information, is irrelevant to the conversation (Maxim of Relation). Therefore there must be some more relevant, less direct interpretation of this question.

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Now, this question is relevant if *s* wants me to do *X*. It is relevant, because one of the pre-conditions for my doing *X* is that I should be willing/able to do *X*. Moreover, if *s* is observing the Politeness Principle to the required degree and is assuming that I am also observing the Politeness Principle, this is as precise and perspicuous a way as any of getting me to do *X* (Politeness Principle, Maxims of Quantity and Manner). Therefore, the most natural assumption is that *s* has uttered *Will/can you X?* in order to get me to do X.

We do not have to suppose that such a laborious piece of reasoning goes on in a hearer's mind whenever an indirect illocution is interpreted. The main point, as Grice affirms, is that the implicature should be 'capable of being worked out' – that it is a rational and interpretable thing to say, given the purposes of the conversation, and the need to observe pragmatic principles such as the CP and the Politeness Principle.

The essence of the Politeness Principle is, in its positive aspect, 'Give credit to the other person', and in its negative aspect, 'Do not cause offence to the other person'. This establishes an asymmetry between speaker and hearer, such that what is polite to the hearer is in some degree impolite to the speaker, and vice versa. *A polite belief* is one that gives credit to the hearer, and an *impolite belief* is one that indicates credit to the speaker or indicates discredit or cost to the hearer. Hence a statement such as *You will open the window* or a command such as *Open the window* express impolite beliefs, and it is advisable for the speaker to adopt some more indirect tactic of getting the message across, if he wants the hearer to perform such an action. In this light, we may think of pragmatics as involving problem-solving strategies both for the speaker and for the hearer. Pragmatics cannot be reduced to rule, but at least through such techniques of analysis as are suggested by Grice's notion of conversational implicature, we can partially explain, in rational terms, aspects of language behaviour which would otherwise seem perplexing and haphazard.

Conclusion

In the preceding section, my aim has been to justify a complementarist approach to what have been called 'indirect illocutions'. I have given a brief sketch of the sort of pragmatic explanations which seems to be called for as a means of explaining some of the less orderly aspects of language use. Such an explanation, I have suggested, will require an extension of Grice's account of conversational implicature to include at least a Politeness Principle. Politeness, like the factors of truthfulness, informativeness, and relevance regulated by the CP, is a matter of degree, and is variable

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according to situation of utterance. We should not, therefore, hope to build a determinate *either–or* model of pragmatics, and, to my mind, it has been a fault of both the semanticist and the pragmaticist approaches to indirect illocutions that they have found it necessary to adopt too regulated a view of what happens in social interaction, by means of language. The advantage of the complementarist position is that it enables us to retain clear-cut distinctions in semantics, while recognizing that in pragmatics, such distinctions may be implemented in ways that are indefinitely variable. Hence we can maintain a logical conception of such categories as *proposition*, *question*, and *command*, and hence a truth-based approach to semantics, which is nevertheless capable of integration with pragmatics. Ultimately, then, the logical and the pragmatic approaches to meaning, which have often seemed at odds with one another, can be reconciled.

Consider one example: the example of questions (cf. Hudson 1975). In discussing the semantic model of Chapters 6 to 14, I have largely limited my attention to propositions; but the logic of propositions is easily adapted to a logic of questions as follows. Questions are propositions with some variable of meaning unspecified. For example, a question 'Where is my coat' or 'How old is Ann' might be represented as a proposition manqué: 'My coat is at place x' or 'Ann is x years old.' Similarly a *yes–no* question is a proposition with the one element 'positive/negative' unspecified. Thus for all questions we can define a set of logical answers, which supply a value for the unspecified variable. This set of answers, which are actually propositions, was earlier called the 'response set' of the question. By this means, then, a question is defined in a way which establishes a systematic extension of the logic of propositions to the logic of questions.

When we turn, however, to the pragmatic use of questions, we can first of all say that the most direct force of a question in most contexts is that of an 'asking': i.e. as a request for the speaker to supply the unknown information represented by the variable x. One of the conditions of an 'asking' is that the speaker should not be aware of the missing information. But there are other pragmatic uses which do not have this condition: for example, in the case of examination questions, the examiner already knows the answer, presumably, but wants to find out whether it is known to the examinees. In court cross-examinations, it is typically the case that the cross-examiner knows the answer to the question he poses, but wants to get the defendant or the witness publicly to declare or acknowledge it. A 'rhetorical question', yet again, is a special kind of question to which both speaker and hearer may be assumed to know the answer. There are many variations, in language use, on the

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interrogative theme. But behind all these variants it is important to recognize a common logic: the logic of questions as 'defective' propositions. Searle, in his study of illocutionary acts, says that 'there are two kinds of questions, (a) real questions, (b) exam questions'. But I would prefer to say that there is in the final analysis only one kind of question, but many pragmatic uses of it.

One last point about the use of the terms *situation* and *context* in this chapter. In Chapter 5 I dismissed the *contextualist* approach to meaning, arguing that it was a misguided attempt to explain meaning in terms of the observable features of context. In this chapter, it may seem that I have allowed contextualism in again by the back door, in the guise of pragmatics. In two respects, however, this objection is unfounded. Firstly, although I have used situational factors in the analysis of pragmatic force, these factors have been limited to four factors making up the situation of utterance (p. 326), and have been introduced in order to explain some difficulties which arise if one attempts to study meaning in abstraction from situation. That is, meaning-in-situation has been regarded as logically subsequent to, rather than prior to, meaning-in-abstraction. Secondly, pragmatics as I have presented it is still *mentalist* rather than *contextualist*, in that pragmatic force consists of meaning elements which are deemed present in the mind of speaker or hearer. For example, I have, like Searle and Grice, assumed that the mental state of *intention* is fundamental to the understanding of illocutionary force; and when I have used the term 'context', I have taken it to be the background knowledge which the speaker assumes to be known to the hearer at the time of speaking. In terms of a useful distinction made by Searle, pragmatics deals with the 'institutional facts' of conversation, rather than with 'brute facts'.

In summary, this chapter has considered three approaches to the relation between semantics and pragmatics: pragmaticism ('all meaning is pragmatics') semanticism ('all meaning is semantics') and complementarism ('semantics and pragmatics are complementary to one another in the study of meaning'). With reference to three major topics – those of presuppositions, performatives, and indirect illocutions – I have argued for the complementarist position.

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17. Alternative Theories

The object of this book, as I declared in the Introduction, has been to follow through one approach to meaning, rather than to attempt a survey of different approaches. I believe this has been justified: such is the complexity of semantic issues and the variety of opinion on them that it is better to see the subject through the 'eyes' of a particular model rather than to receive a general and necessarily rather superficial survey of 'schools of thought' and the controversies in which they have engaged.

My hope is that the reader who has browsed, worked, or wrestled through this book will now have some firm bearings in the subject, which he can use in exploring other approaches, both theoretical and practical, on his own initiative. The *Background Reading* section following this chapter is intended to help in this. But before we come to that point, I feel that I owe readers some account, however limited, of the relation between the line of approach I have taken here, and other approaches which have been adopted within recent linguistics. I have in mind especially the opposed 'generative' and 'interpretive' approaches to semantics, both of which have developed out of Transformational Grammar (see p. 343 opposite).

These two schools of thought (or rather, two variants of the same school) have made up one of the most influential and productive sources of new ideas and insights in recent semantics. It is around them that I shall concentrate the discussion of this chapter.

Regrettably my descriptions of alternative models, as well as my arguments in defence of the present model, will be greatly simplified and incomplete if I am to confine them to a single chapter. In making this conventional apology, I feel less guilty than usual; such is the speed with which new developments in semantics take place, that I could not hope, even if I expanded this chapter into a book, to take account of all major arguments which have been advanced in favour of this or that model in the last ten or so years. It is a measure of this rate of change that the state of transformational theory reached in 1965 (with the publishing of Chomsky's influential *Aspects of the Theory of Syntax*), the so-called Standard Theory, is now sometimes referred to as 'classical'. It does seem, in retrospect, as if transformational grammar reached at that point a

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brief period of stable certainty which evaporated in the *Sturm und Drang* of more recent developments.

The generative–interpretive controversy raged in the early seventies, but had no conclusive outcome. Like boxers who realize that neither combatant has the strength for the knock-out blow, after a while the partisans of each side moved on to other topics of interest. Standard Theory has been superseded by Extended Standard Theory, which has now given way, in Chomsky's work at least, to a Revised Extended Standard Theory. Since this last variant of transformational grammar returns in some respects to Chomsky's earliest published model (1957), one sometimes wonders if the whole of transformational grammar, and the conception of semantics associated with it, is moving in circles. But as the most recent developments (see p. 356–9) have not so far crystallized to the extent that they have yielded firm and interesting theoretical results in semantics, I shall feel justified in focusing mainly on the generative and interpretive points of view.

'Generative' versus 'Interpretive' Semantics

The popular (though potentially misleading) labels *generative semantics* and *interpretive semantics* refer not so much to ways of studying semantics *per se*, as to ways of relating semantics to syntax. Both developed out of the Standard Theory of 1965. Transformational grammar is the theory of language in which syntax is considered to have two kinds of rules: phrase-structure rules which specify the form of constituent-structure trees, and transformational rules, which in essence convert one kind of tree-structure into another (e.g. an active structure into a passive structure – see p. 196). In the earliest published version of transformational grammar – Chomsky's *Syntactic Structures* (1957) – meaning was in effect ignored. It was assumed that syntactic rules operated in complete independence from meaning: their function was to 'generate' or specify by rule the grammatical sentences of a language, and to assign to these sentences their correct structure. In fact, many of the transformational rules, such as that which converted an active sentence structure into a passive sentence structure, happened in general to preserve the meaning of sentences unaltered (and therefore, in a sense, to be rules of paraphrase), but this was considered an irrelevant side-effect of such rules. From that time, however, or more precisely, after a pioneering article on semantics by Katz and Fodor ('The Structure of a Semantic Theory', 1963), transformational grammar went through a period of conceding to semantics a more and more important position in linguistic theory.

Both interpretive semantics and generative semantics took as a point of

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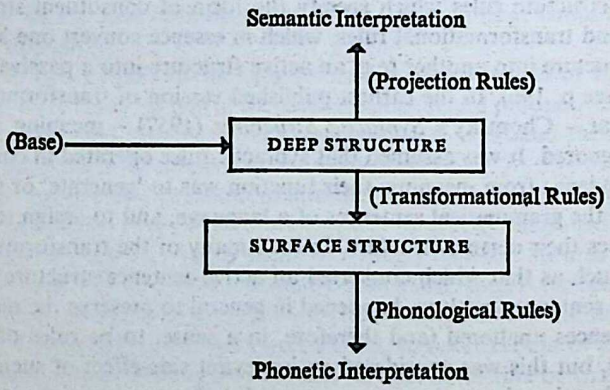
departure the Standard Theory of Chomsky (1965), in which a sentence was seen as organized syntactically on two chief levels: that of *deep structure* and that of *surface structure*. The surface structure of a sentence was derived from the deep structure by means of transformational rules involving such operations as the deletion of constituents, the movement of constituents from one part of a sentence to another, etc. The rules which specified the deep structure were phrase structure rules, which spelt out the basic constituency of sentences in terms of categories like Noun Phrases, Verbs, etc. These rules made up the *base* component of syntax, and had as their output (after the insertion of lexical items) deep structures; the transformational rules made up the *transformational* component of syntax, and had as their output surface structures. Apart from syntax, which was the central part of the total grammar, there were two 'interpretive' components: the phonological and the semantic. The phonetic interpretation of a sentence was derived from its surface structure by means of phonological rules, while the semantic interpretation of a sentence was derived from the deep structure through the operation of the so-called *projection rules* of semantics. The whole theory, therefore, through the interaction of its various components, provided a matching of phonetic outputs with semantic outputs. It may be diagrammed as follows:

(I) *Standard Theory: Transformational Grammar* 1965



Read from top to bottom, this diagram provides an account of the pairing of meanings with sounds which any complete linguistic theory must attempt. But the syntactic component, it is to be noted, has special

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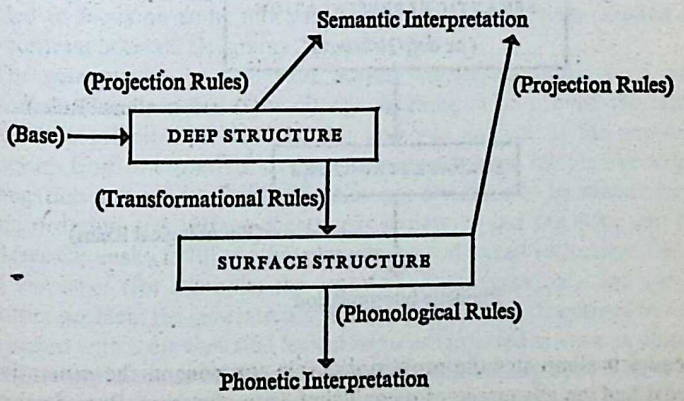
status as the point from which the derivation of both sounds and meanings originates. Among the special claims of Standard Theory are (a) that syntactic *surface* structure is the only level of syntax relevant to the specification of *phonetic interpretation*; and (b) that syntactic deep structure is the only level of syntax relevant to *semantic interpretation.* This second point brings with it the important principle that transformational rules are *meaning-preserving*; that is, they do not in any way alter the meaning of the structures that they operate on. This means, in effect, that all sentences that have the same deep structures have the same meanings.

As we see, Standard Theory provides for an *interpretive* semantic component; that is, the meaning of a sentence is specified by the application of semantic rules to a syntactic *base.* But later, an important modification to the interpretivist position was proposed. Chomsky (1970), Jackendoff (1972), and others noticed that some aspects of meaning (mainly aspects involving scope of negation, quantification, and focus) appeared more directly relatable to surface structure than to deep structure, and therefore proposed that the 'projection rules' specifying meaning should operate on surface structures (and perhaps at intermediate points in a transformational derivation) rather than simply on deep structures. In other words, no longer did the interpretivist position involve a claim that all sentences with the same deep structures have the same meaning. The revised picture looked more like this:

(II) *Extended Standard Theory:*

Revised 'Interpretive Semantics' Position



(The diagram does not represent the possibility of projection rules

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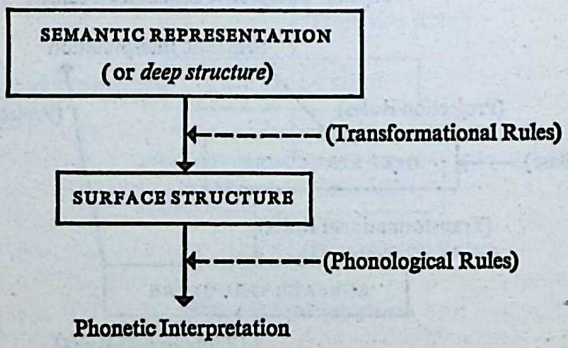
operating at intermediate points between deep and surface structure.)

Within this revised theory, deep structure reverted to being a level to be justified very largely on syntactic grounds alone. One could no longer argue (as one could with the 1965 model) that the synonymy of two lexically similar sentences is good *prima facie* grounds for supposing they have the same deep structure; instead, the argument had to be based on criteria such as syntactic well-formedness.

*

Generative semantics, like interpretive semantics, arose out of Standard Theory, but it developed along a quite different path. Arguments of the kind that gave rise to a deep structure level in the first place led, in the writings of Lakoff, McCawley, Ross, and others, to the 'deepening' of deep structure so as to make it closer to a representation of a sentence's meaning, and correspondingly to the lengthening of the transformational process of derivation from deep to surface structure. Syntax became more abstract. The logical terminus of this process was reached (in Ross and Lakoff 1967 and McCawley 1968a) when the deep structure of a sentence was declared to be so 'deep' as to be *identical* with its semantic representation. This now meant that the 'base' component, in the sense of Chomsky (1965), was no longer syntactic, but semantic. And since the deep structure *was* the semantic interpretation, there was no longer any need for the projection rules to supply an interpretation of deep structure. Projection rules therefore disappeared, and the resulting picture was:

(III) *'Generative Semantics' Position*



Because it eliminates the projectional rule component, the generativist model has the advantage of overall simplicity of design. But of course, this simplification is necessarily at the cost of expanding the transform-

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ational component, and making the chain of transformational derivation for each sentence considerably longer than was envisaged by Chomsky in 1965.

The labels 'generative' and 'interpretive' seem to have arisen because of a supposed distinction between base components of a grammar (which 'generate' sentences) and derived components (which 'interpret' the outputs of the base component). A simple way of defining interpretive and generative semantics on these lines is to say that in the one case the semantic representation of a sentence is derived from a syntactic base, whereas in the other, the (surface) syntactic representation is derived from a semantic base. These descriptions accord with the direction of the arrows on Diagrams (II) and (III), which reinforces the idea that the direction of dependence is reversed. However, leading transformational grammarians of both generative and interpretive persuasions denied that the question of direction of derivation has any substance. Although by mental habit linguists talk of 'X being derived from Y', 'X coming from Y', 'X being later in the derivation than Y', 'X being an output of Y', etc., it is difficult to refute the claim that any rule formulated in an 'X → Y' direction could equally well be formulated, if one wanted to, in a 'Y → X' direction.

The Generative–Interpretive Controversy

The question of 'directionality', then, is generally assumed to be a matter of no empirical consequence. It is not a question of the intrinsic properties of language, but rather of how the linguist chooses to formulate his rules. Consequently, the arguments between generativists and interpretivists tended to focus on some more substantial issues which are implicit in the contrast between Diagrams (II) and (III).

The generativists, in the main, stayed committed to the view that transformational rules do not change meaning. This proved the most vulnerable principle in their model, and was subject to the severest criticisms from interpretivists. As we have already seen, factors like scope of negation and scope of quantification are conditioned by surface syntactic ordering and surface constituent structure; and the same can be said (see Chomsky 1970) of other phenomena connected with scope, focus and emphasis (for example, the scope of the adverbs *only* and *even*). Another problem the generativists faced in maintaining this principle was connected with their view that lexical items are inserted at various points *during* a transformational derivation, rather than at a single point, namely *before* the transformational derivation starts. Arguments were put forward (see, for example, Postal 1971b) to show that at least some trans-

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formations must precede lexical insertion. This meant that the lexical insertion rules (such as that which replaces 'COME + BECOME + NOT + ALIVE' by *die*) were simply a sub-class of transformations. But the difficulty with this is that these transformations often had the apparent effect of changing meaning, because of the influence of what, in an earlier chapter, I called 'petrification' (p. 226), and more generally, because of historical and idiosyncratic influences on the meanings of lexical items. If, for example, a rule is set up to derive 'John was tearful' from 'John was full of tears', and 'John was graceful' from 'John was full of grace' this will misrepresent the meanings of *helpful* ('full of help?'), *dreadful* ('full of dread?'), *hateful*, *pitiful*, *masterful*, etc., when we try to apply it to them.

The generativists, on the other hand, concentrated their fire on the most vulnerable part of the interpretive position: namely, the claim that there is a valid level of linguistic abstraction corresponding to the deep syntactic structure of classical theory. Deep structure, according to the Standard Theory, has a number of different functions, quite apart from that of being the level relevant to semantic interpretation:

(a) It is the level where lexical items are inserted into syntactic derivations.
(b) It is the level where relations of subcategorization are defined (e.g. classification of nouns in terms of 'countable' and 'mass'; classification of verbs according to selection restrictions).
(c) It is the starting point for the application of transformational rules.
(d) It is the level at which concepts such as 'Subject' and 'Object' are defined.

As Lakoff pointed out (1968), there is no particular reason to suppose that any single level has all these properties. On the contrary, there are good reasons for challenging its existence. McCawley (1968a) showed that selection restrictions are semantic (see p. 138), and so threw into doubt the 'subcategorization' function of deep structure. Further, generativists argued (see especially Postal, 1971b) that the same rules are required to operate before lexical insertion as after it, and therefore that the interpretivist is compelled to deal with the same phenomenon in two different ways: in one case by projection rules, and in another by transformations. Thus, interpretive semantics, by insisting that there is a single level of lexical insertion prior to the operation of transformations, failed to recognize generalizations that can be made about transformational processes.

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A Multiple-based Model

As I have suggested, the strongest arguments on both the interpretive and generative sides were arguments against the rival position, rather than arguments positively in favour of one's own position. Accordingly, I feel there is nothing absurd about adopting a third position, which is neither strictly generative nor interpretive in the above senses, but in which some of the advantages of both sides are, I believe, to be gained. 'Generative semantics with deep structure' will seem like a contradiction, or at least like an inelegant hybrid, to those conditioned to the two-sided generative–interpretive debate. But I shall try, within severe limitations of space, to sketch one or two of the arguments for a model which, in a way, meets this description.

It will be evident to anyone who has followed my remarks on the relation between semantics and syntax, both in Chapter 10 and elsewhere, that the position I have assumed does not accord in all respects with either the generative or the interpretive model. In Chapter 10, I put my money on a three-component model of language (semantics – syntax – phonology), and proposed *expression rules* which would have the function of translating (or 'recoding') semantic representations as syntactic representations, or vice versa (no directional precedence was assumed). But I distinguished such semantic-syntactic mapping rules for transformational rules, which I regarded as rules operating on syntactic representations only, mainly for thematic or stylistic arrangement. This distinction between semantic-syntactic mapping rules and transformations has no parallel in either the generativist or the interpretivist model: I am suggesting, more or less, that instead of the gradual transition from semantics to (surface) syntax that the generativists envisaged, there is a definite break between the two. On the other hand, my proposal will not fit into the interpretive semantic model, because my view of a semantics with its own dependency structure accords with the generativist's concept of a semantic base, whereas for the interpretivist semantic representations are configurations of markers or features derived from syntactic constituent structures.

In Chapter 11 I put forward in some detail a model for the lexicon or dictionary, in which each lexical entry is composed of three specifications – morphological, syntactic, and semantic. I also proposed a separate morpheme index which would phonologically interpret the stems and affixes identified in the morphological specifications. These views again conflict with the transformational positions: in the classical transformational theory, lexical entries consist of semantic, syntactic, and

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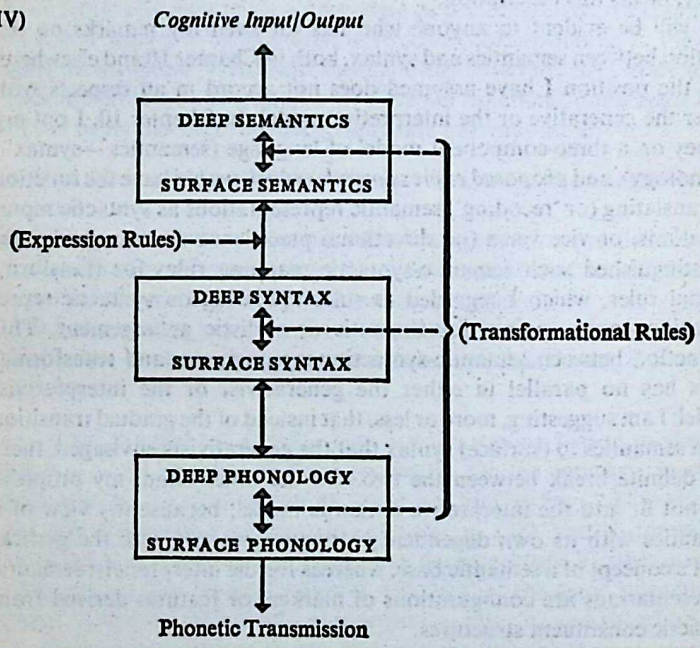
phonological (not morphological) specifications; whereas from the generativist point of view, lexical rules are not a separate category at all, but rather a sub-class of transformations.

Then in Chapters 12 and 13 I developed the notion of rules of implication (in effect, rules of semantic equivalence), which have no formal equivalent in transformational grammar. I conjectured that such rules might fruitfully be formulated as semantic transformations relating 'deep semantics' to 'surface semantics' rather as syntactic deep structure, in classical transformational grammar, is related to syntactic surface structure by syntactic transformations.

The model which has been hinted at and discussed informally in various places in this book can now be formulated in a tidier manner:

(IV)



This model contains more specified levels of representation than those of (II) and (III), and so may give an appearance of greater complexity, but this is offset by the understanding that each stage of the diagram portrays a set of rules less complex than the analogous set of rules of the generativist or interpretivist models. For example, syntactic transformations in this model are restricted in the main to 'movement'

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transformations which shift elements around for thematic emphasis, etc. (this roughly corresponds to what has been called 'secondary topicalization'; see Fillmore 1968: pp. 57–8). Moreover, the diagram has the advantage of suggesting a symmetry in the overall structure of language which neither of the other models reflects. In this respect, it resembles some non-transformational models of language, such as the stratificational model of Lamb (1964), and the tagmemic grammar of Pike (see Cook, 1969), both of which see language as a tiered structure of interrelated strata or coding systems. Of course, symmetry is not a goal to be sought for its own sake in despite of other considerations, but if other considerations lead to symmetry, all well and good.

The parallelism which I have indicated between semantics and syntax may be extended also to phonology. Although this is somewhat remote from the main themes of this book, I will briefly mention that generative phonological theory (e.g. Chomsky and Halle 1968) has postulated a set of rules, connecting deep phonology (or 'phonological representation'), with surface phonology (or 'phonetic representation').

Deep syntax in this account is similar to the deep structure of classical transformational grammar, except that it fulfils only certain of the functions of that level as proposed by Chomsky (1965):

(a) It is the level where lexical items are inserted.
(b) It is the level where *syntactic* sub-categorization is defined (e.g. Transitive/Intransitive Verbs; Countable/Mass Nouns; *but not selection restriction categories such as* Animate/Inanimate).
(c) It is the starting-point for the operation of *syntactic* transformations.
(d) It is the level at which concepts such as 'Subject' and 'Object' are defined.

The italicized parts of these stipulations are those respects in which deep syntax is different from classical deep structure, as it was defined earlier (p. 348). None the less, the correspondence is considerable. At the same time, the semantic component of the model is 'generative' in that it has its own base, and structural conditions of well-formedness. Thus we have two separate bases, with syntax and semantics both having independent well-formedness conditions. In fact, various phonologists (see especially Sampson, 1970) have argued for a phonological base, and this view of phonology is the one I have assumed here. Hence the model differs from both the generative and interpretive moulds in containing more than one base component.

The remarks above may have helped to give this model some initial plausibility, but a fuller justification would obviously require detailed refutation of the objections of generativists and interpretivists from their

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respective positions. I can do no more than outline one or two of the arguments that play a part in the justification of the model.

In Justification of a Multiple-based Model

To start with, it is necessary to clarify the main issues of such a debate.

(a) *From the interpretive point of view*, I have to defend adopting the generativist position that all conceptual meaning is specified in the semantic representation, and that there is no need to allow for the introduction of new factors of meaning by the rules mapping that representation on to surface syntax. The factors of meaning usually associated with surface syntax are those involving scope or focus. In particular, they include scope of negation and scope of quantifiers; also the semantic effect of intonation in determining information focus. I have already argued, however, that such factors of *thematic meaning* do not introduce further possibilities of interpretation in addition to those present in semantic representations, but rather filter out or suppress some of the possibilities inherent in the semantic interpretation (pp. 19–21, 291). There appear to be no cases where additional features of meaning are added in surface syntax in such a way as to modify truth conditions positively. I therefore consider that through the distinction I have drawn between conceptual and thematic meaning (p. 19), this objection has already been answered.

(b) *From the generative point of view*, I have to justify the existence of a level of 'Deep Syntax' intermediate between (surface) semantic representations and surface syntactic representations. (I shall here, for convenience, adopt the transformationalist's conventional assumption that surface syntax is derived from deeper levels, rather than vice versa: that is, I shall discuss the mappings between levels in terms of a *speaker's model* (meaning-to-sound) rather than a *hearer's model* (sound-to-meaning).) The 'Deep Syntax' level has already been defined as a level (a) at which lexical insertion takes place; (b) at which syntactic subcategorization is introduced; (c) which is the input to syntactic transformations. I shall now put forward a number of arguments which can be used in support of a 'deep syntactic' level, and more generally, in support of the linguistic model diagrammed in Figure (IV).

(1) *Independent Well-formedness Conditions in Syntax*: In Chapter 10 (pp. 180–87) I pointed out a number of arguments, which I shall not recapitulate here, for the proposal of separate conditions of well-formedness in semantics and in syntax.

(2) *A Single Level of Lexical Insertion*: Generativists have argued that the insertion of lexical items into a sentence takes place during rather

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than before the operation of transformational rules on semantic representations. But their view that a lexical insertion rule is merely a type of syntactic transformation is, to my mind, a mistake. Such lexical insertion rules will fail in generality unless they try to capture the creative potentiality of the lexicon, as displayed in the discussion of lexical rules on pp. 212–27. Yet they will also fail unless they indicate the *limited* productivity of lexical rules, and the tendency for the semantic consequences of lexical rules to be modified, in the historical development of the lexicon, by the process I have called 'petrification' (p. 226). The combination of regularity and idiosyncrasy in the lexicon can only be captured by a linguistic model which recognizes the separateness of lexical rules from syntactic rules. This difference is not recognized in the generative semantics model, but it is in the model I propose, where derived lexical definitions are not the output of transformations, but the product of lexical rules operating in the lexicon.

(3) '*Anaphoric Islands*': Postal (1969) observed that certain linguistic units behave as 'islands' for purposes of anaphora or discourse reference (see p. 158), in that, for example, one cannot refer to elements inside them by means of a pronoun. In fact, these units correspond to the units we discussed in Chapter 11 as *lexical items*.

In support of his observation, Postal pointed out the unacceptability of the sentences marked (b) as paraphrases of the sentences marked (a) in such pairs as these:

(1a) Fred is a child whose *parents* are dead, but *yours* are still alive.
(1b) *Fred is an ORPHAN, but yours are still alive.

(2a) People who collect *stamps* sometimes pay vast sums for *them*.
(2b) *PHILATELISTS sometimes pay vast sums for them.

(3a) You can send your belongings by ship cheaper than you can by air.
(3b) *You can SHIP your belongings cheaper than you can by air.

(4a) A man who tames *lions* was mauled by *one* the other day.
(4b) * A LION-TAMER was mauled by one the other day.

(5a) The girl with red *hair* intends to dye *it*.
(5b) *The RED-HAIRED girl intends to dye it.

In the sentences marked (b), we notice that lexical items (such as those in capitals) are 'anaphoric islands' in that any constituent which is assumed to be in their underlying representation cannot be referred to by a pronoun, an ellipted ('understood') element, or any other anaphoric device. But when the meaning of the lexical item is spelled out more explicitly in terms of a syntactic construction, as in the (a) sentences, anaphora is possible. (The anaphoric item and its antecedent are signalled

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by italics in the (a) sentences, except in (3a), where anaphora is manifested in the ellipsis of *send your belongings*.)

The very notion of an 'anaphoric island' presupposes a framework in which lexical items such as *orphan* are presumed to arise transformationally, as substitutions for syntactic structures (in the case of *orphan* the syntactic element replaced would be a partial noun phrase containing a relative clause, something like *child whose parents are dead*). Such a substitution is necessary in the generative semantics model in order to account for the synonymy between pairs such as (1a) and (1b). Within the present model, on the other hand, *orphan* has no syntactic structure, only an underlying semantic structure. Thus the meaning of *orphan* is anatomized as a set of semantic features including a downgraded predication; the feature →PARENT occurs in that definition, but not the noun *parent*. Since anaphoric reference is a syntactic process, belonging to a different level of representation from the semantic representation, it follows naturally that no pronoun or other anaphoric device can refer to something within a lexical definition. Hence what Postal discussed as an interesting phenomenon in need of explanation is automatically accounted for in a model which separates the semantic and syntactic representations of lexical items.

As is shown by examples (3a), (4a), and (5a), the same principle applies not only to morphologically simple items like *orphan*, but also to lexical entries derived by affixation, conversion, or compounding from simpler lexical entries. Although *lion* in (4b) is a morphological base of the compound *lion-tamer*, it is not a syntactic constituent of the sentence, and therefore cannot be antecedent of a pronoun.

'Anaphoric islands', therefore, provide a second argument for the separation of lexical rules from syntactic transformational rules.

(4) *The Need for Distinct Semantic and Syntactic Categories*: In Chapter 10 (pp. 180–84) I assumed that syntactic categories (sentence, noun, verb, pronoun, etc.) are distinct from semantic categories (predication, argument, predicate), and it is interesting that this distinction was often informally assumed by generativists (e.g. McCawley 1968a, Lakoff 1970), who, when talking about semantics rather than syntax, replaced syntactic labels by semantic ones. Obviously, if the vocabulary of categories in semantics is distinct from that in syntax, at some point in the specification of a sentence there must be a mapping of semantic categories onto syntactic categories, in a manner such as that sketched out on p. 183. The generativists, so far as I know, did not discuss the possibilities of such a mapping, and assumed simply that 'arguments' and 'predicates' are alternative names we might give to nouns and verbs on the deepest level of representation. But this led to implausible efforts to reduce some

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syntactic categories to others: adjectives, on the deepest level, were regarded as 'really verbs'; prepositional phrases were 'really noun phrases'; the quantifiers and the negative word *not* were also 'really verbs', and so on. It was often unclear, in such reductions, what were the criteria for deciding which category is derivative and which is fundamental – which the chicken, and which the egg. Could one not equally well argue, for instance, that verbs are adjectives rather than that adjectives are verbs? At the level where verbs are equated with predicates and nouns with arguments, all the properties which, in grammatical tradition, have distinguished such grammatical categories (e.g. for verbs, modification for number, person, tense, aspect, non-finiteness, etc.) are absent.

The way this is handled in a multiple-base model is by the one–many mappings of expression rules (p. 180). By this means we are able to say that a verb phrase, a preposition, and a conjunction may all have *underlying* them a single semantic category, namely a predicate, without having to argue that such prepositions and conjunctions are 'really verbs'. The separation of syntactic from semantic categories is parallel to, and just as desirable as, the separation of syntactic categories (like 'word') from phonological categories (like 'syllable').

(5) *Semantic 'Transformations'*. Unlike the generative and interpretive models, the present model allows for a separate set of semantic transformations or rules of implication. The motivation for such rules, which was tentatively argued in Chapter 13, may also be considered a motivation for adopting a theory within which semantic transformations have an assigned function, analogous to the function of syntactic transformations in syntax. With semantic transformations it is sometimes possible to make generalizations beyond the power of syntactic transformations. For example, there is in most orthodox accounts of transformational grammar a 'Pseudo-cleft-sentence' transformation, which permits the formation of sentences such as (6b) and (7b) on the model of simpler sentence structures such as those of (6a) and (7a):

(6a) Bill likes cake. (6b) What Bill likes is cake.
(7a) I had a fight with John. (7b) John was who I had a fight with.

This, in the present account, is an unnecessary rule, because a paraphrase relation such as that between (6a) and (6b) is in any case generated by the semantic rule of identification, as we saw in Chapter 13 (p. 263). That is, the syntactic transformation can be dispensed with as dealing merely with a special case of the semantic transformation.

Two more arguments may be mentioned, finally, more generally in defence of a multiple-based model.

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(6) *The Suspect Nature of Some Transformational Rules*: In the interpretive-generative debate, the interpretivists (see especially Chomsky, 1972) criticized certain generativist rules (such as the rules of 'raising', 'predicate raising', and 'quantifier lowering' (see McCawley 1970b, Lakoff 1970)) which do not behave as other transformations, or else appear to lack syntactic motivation. These suspect rules would be dispensed with in a multiple-based model, their functions being assumed by expression rules and semantic transformations. Thus objections which were made to generative semantics as a result of its extension of the function of transformational rules would not apply to the present model.
(7) *Transformations as 'Structure Preserving'*: Joseph Emonds, in *A Transformational Approach to English Syntax*, 1976, proposed an influential variant of transformational grammar, in which many transformational rules are 'structure preserving' – i.e., the changes which such rules make to the structure of sentences result in structures which are themselves well-formed according to the rules of the base. In Emonds's system, 'Structure Preserving' transformations include, for example, the passive transformation, and the adverb-movement transformation. The *by*-phrase (see p. 196) which results from the passive rule is just like any other adverbial prepositional phrase as regards its syntactic behaviour. Similarly, the position of the adverb as a result of the adverb-movement rule (e.g. *She phoned him yesterday* → *Yesterday she phoned him*) is perfectly grammatical according to normal rules of adverb placement, in contrast to, say, **She phoned yesterday him.* What this illustrates, informally speaking, is that transformations on the whole cannot do as they like: they can only do things which are permitted by general syntactic conditions of well-formed structure. This is what one would expect according to the model outlined here; the 'structure-preserving constraint' of Emonds is interpreted, in this model, to mean that syntactic transformations operate within separate syntactic conditions of well-formedness, according to the distinction between syntactic and semantic well-formedness for which I have argued in Chapter 10. Here, then, is another factor favouring the multiple-based model.

Semantics Today

Since the mid-seventies, the major figures in the generative–interpretive debate have developed their thinking in disparate ways. As already noted, Chomsky's interpretive view of language has evolved still further from the Standard Theory, through the Extended Standard Theory of 1970, to the 'Revised Extended Standard Theory' of 1975 onwards. In this later revision, the relation between syntax and semantics is virtually the opposite of what it was in the standard theory: the interpretation

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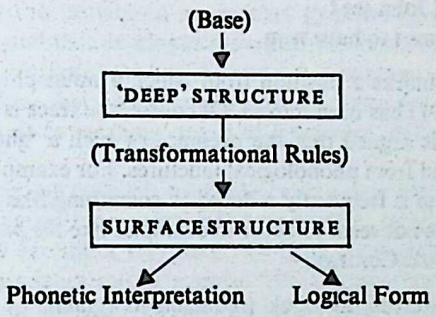
of what a sentence means is derived from its surface structure, rather than from its deep structure. Deep structure still exists, but may be less misleadingly referred to as the 'Initial Phrase Marker': it is the input to the transformational process, but is no longer the locus for semantic interpretation. Consequently, a radical rearrangement of Diagram (II) (p. 345) is called for:

(V) '*Revised Extended Standard Theory*'



Apart from the misgiving over the use of 'deep structure', this diagram reflects a further terminological step, the abandonment of the term 'semantic interpretation' in favour of that of 'logical form'. The claim is that 'logical form' includes logical information about the meaning of a sentence, but does not incorporate a complete semantic representation. This marks a retreat by Chomsky from the earlier view that grammar is a sound–meaning mapping. He argues, in contrast, that semantics cannot be fully incorporated into sentence grammar:

> It seems to me reasonable to adopt the working hypothesis that the structures of formal grammar are generated independently, and that these structures are associated with semantic interpretations by principles and rules of a broader semiotic theory. (Chomsky and Ronat, 1979, pp. 56–7)

'Logical form' is a partial specification of meaning, the specification of that aspect of meaning that is determined by grammatical structure. Other aspects of meaning (notably lexical meaning) are assumed to belong to a different cognitive system.

The apparent topsy-turviness of Diagram (V) can be pressed further – Chomsky has even accepted the suggestion (Chomsky and Ronat, 1979, p. 173) that phonetic interpretation is determined at least in part by 'deep' structure, a proposal which threatens to stand on its head the 1965 concepts of deep and surface structure. But to make Diagram (V) more

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intelligible, it should be explained that the proposal to derive logical form from surface structure relies not only on an impoverished notion of semantics, but on an enriched notion of surface structure. Chomsky and his co-workers have put forward a *trace theory* of syntax, whereby elements which are deleted by transformations are still represented in surface structure by variables called *traces*, marked 't' in the following examples:

(8) *Who* did John see t
(9) *John* seems t to have won

The trace (t) marks a position from which a noun phrase (*who* in (8) and *John* in (9)) has been moved. Of course, the trace is phonologically silent, but it is argued that the presence of such a 'ghost' constituent can be detected from phonological junctures. For example, in colloquial English *want to* is frequently reduced to something like *wanna*; but this reduction does not seem to occur in examples like *the people that I want to read this book*. Contrast:-

(10) I *want to* read this book. (reducible to *wanna*)
(11) The people that I *want to* read this book ... (not reducible to *wanna*)

In this way, certain characteristics of the deep structure are assumed to be preserved in surface structure and even in the phonetic interpretation, so that the claim that meaning is derivable from surface structure is less implausible than it appears.

It is difficult to generalize about other current developments in theoretical semantics. One of the leading semanticists working with transformational grammar, J. J. Katz, has remained faithful to the Standard Theory, whereas of those linguists who used to support a generative semantics position, some have abandoned formal theorizing altogether in favour of developing insight into descriptive problems of meaning. One might mention, as one promising development, Fillmore's (1977) discussion of meaning in its relation to what he calls 'scenes' – psychological schemes of which a reference to one part will conjure up the remaining parts. Thus the concepts of 'buying' and 'selling', 'paying' and 'spending', each focus on different aspects of a basic commercial 'scene' in which buyer and seller exchange goods and money. Another development in the direction of a more informal psycholinguistic approach to meaning is Lakoff's investigation of the metaphorical basis of meaning (Lakoff and Johnson 1980). Both these approaches draw on Eleanor Rosch's notion of prototype (see p. 84), and adopt the view (opposed to that of Chomsky) that meaning cannot be easily separated from the

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more general cognitive functions of the mind. Fillmore and Lakoff also differ from Chomsky in supposing that something very different from traditional logical systems is needed if we are to give a psychologically appropriate account of linguistic meaning.

These current differences still reflect a basic tension between semantic viewpoints which are primarily influenced by philosophical logic, and those primarily influenced by cognitive psychology. My own conviction – to return to the theme with which Chapter 1 began – is that semantics must not depend too heavily on approaches to meaning provided by other disciplines, and that developments which will bring most rewards in the future will be those which bring into a harmonious synthesis the insights provided by the three disciplines which claim the most direct and general interest in meaning: those of linguistics, philosophy, and psychology.

This last chapter will have left the reader with a clear impression that basic issues are by no means decided in semantics. In spite of rapid developments, we are still a very long way from turning the discipline from a would-be science into a science. The theories that have been constructed must be labelled with that cautionary term 'speculative'; but at least we have reached a point where relatively clear and detailed formulations can be made about meaning in natural language.

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Background Reading

[This review of books and articles relating to semantics is organized on a chapter-by-chapter basis. Titles are frequently abridged and dates omitted to save space. The references are given in full in the Bibliography which follows.]

Introduction and 1. Meanings of Meaning

A number of general books on semantics can be recommended. Lyons, *Semantics* (Vols. I and II), is a most comprehensive and scholarly introduction to the subject. Kempson, *Semantic Theory*, focuses on recent issues, and on semantics regarded as 'a bridge discipline between linguistics and philosophy'. For a psychological orientation, on the other hand, Chs. 11 to 14 of Clark and Clark, *Psychology and Language*, are both very sound and very readable. Lyons, Kempson, and Clark and Clark all contain excellent bibliographical information.

A useful and relatively non-technical introduction is Palmer, *Semantics*. Those more interested in word-meanings, as well as in theoretical issues, will find much of value in Lehrer, *Semantic Fields*, or Nilsen and Nilsen, *Semantic Theory*. Ullmann, *Semantics: an Introduction*, and Waldron, *Sense*, are readable introductory surveys taking a broad view of the subject which incorporates historical change of meaning. Semantics overlaps with semiotics or semiology, the study of signs and sign-systems, and this wider topic is introduced in Guiraud, *Semiology*.

Hofmann's *Bibliography* (1974a) has recently been supplemented by that of Gordon (1980).

2. Seven Types of Meaning

The view (elaborated here) that total meaning can be separated into various ingredients, of which conceptual or denotative meaning is the chief, has often been held by writers on semantics (see, for example, Bloomfield, *Language*, Ch. 9, and Lyons, *Semantics*, Vol. I, Ch. 2). An opposite school of thought holds that meanings cannot be legitimately anatomized in this way: that meaning is unitary. Chafe, *Meaning*, is a modern representative of this tradition, and Bolinger, *Meaning and Form*, inclines to this position in defending the principle of 'one form for one meaning, and one meaning for one form'.

With regard to social meaning, Crystal and Davy, *Investigating*, and O'Donnell and Todd, *Variety*, include practical studies of social language variation.

On associative meaning, the 'Semantic Differential' technique is expounded in Osgood, Suci and Tannenbaum, *Measurement of Meaning*. The value of the tech-

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nique is assessed in Weinreich, 'Travels' and in Carroll's review of Osgood, *et al.*

More limited but well-known studies of social meaning are Brown and Gilman, 'Pronouns', and Ervin-Tripp, 'Sociolinguistics'. These focus respectively on second-person pronouns and on forms of personal address.

Thematic meaning has been handled by various scholars using varied terminologies ('theme'/'rheme', 'given'/'new', 'topic'/'comment', etc.). See especially Firbas, 'On Defining', Halliday, 'Transitivity and Theme', Parts II and III, and Quirk, *et al.*, *Grammar*, Ch. 14.

3. 'Bony-Structured Concepts'

For classic relativisitic views of conceptual structure, see Sapir, *Selected Writings*, and Whorf, *Language, Thought, and Reality*. For the literature of colour semantics, see Ch. 12 below. Rosch, 'Relativity', surveys the arguments for and against the Whorfian position. On children's acquisition of conceptual distinctions, read Clark and Clark, Ch. 13; also E. V. Clark, 'What's in a Word?', and Bowerman, 'Semantic Factors'.

The revolution in linguistic thought which brought universalism back into favour can be studied in the writings of its prime mover, Noam Chomsky (especially *Cartesian Linguistics*, *Language and Mind*, and Ch. 1 of *Aspects*). The most accessible recent introductions to Chomsky's thought are Chomsky and Ronat, *Language and Responsibility*, and 'Dialogue 11' in Magee, *Men of Ideas*. Both of these are edited transcriptions of interviews with Chomsky.

4. Semantics and Society

Among the various classifications of the communicative and social functions of language that have been proposed, those of Bühler (*Sprachtheorie*), Jakobson ('Linguistics and Poetics'), and Halliday ('Language Structure' and other publications) are notable. The present account is a modified and simplified version of Jakobson's classification. The concept of 'phatic communion' (or the phatic function of language) originates with Malinowski, 'The Problem of Meaning'.

The influence of the General Semantics movement founded by Korzybski (*Science and Sanity*) can be most conveniently studied through its successful popularizations by Chase (*Tyranny of Words*) and, more especially, Hayakawa (*Language in Thought and Action*). General Semantics has been criticized from various points of view; see, for example, Black, 'Korzybski's General Semantics'. For too long philosophers and linguists have seemed to stay aloof from the problem of miscommunication and semantic deception in modern society. Apart from Black's own philosophical critique of language abuse in *Labyrinth*, Ch. 7, the chief exception to this is Bolinger's hard-hitting yet entertaining study, *Language – the Loaded Weapon*.

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5. Is Semantics Scientific?

On scientific method, see Popper, *Conjectures*, Ch. 1, or (for a lucid second-hand account of Popper's thought) Magee, *Popper*.

The Malinowski–Firth approach to meaning via context of situation can be traced from Malinowski, 'The Problem of Meaning' and *Coral Gardens*, to Firth, *Papers* (especially 'Modes of Meaning'). An appraisal of Firth's semantics is given by Lyons, 'Firth's Theory'. On behaviourist semantics, see Lyons, *Semantics*, Vol. I, Ch. 5. Wittgenstein's *Investigations* provides an important philosophical backcloth to the contextualist era of semantic thought. For a strong defence of mentalism, see Katz, 'Mentalism'.

Experiments in semantic informant testing are reported in Bendix, *Componential Analysis*, and Leech and Pepicello, 'Semantic versus Factual Knowledge'. Psycholinguistic experiments with meaning are discussed in Clark and Clark, especially Chs. 11 to 14. See also Fillenbaum and Rapoport, *Subjective Lexicon*, for quantificational studies of 'semantic space', and H. H. Clark, 'Word Associations', for the relevance of word-association experiments to semantics. On semantic aspects of aphasia, see Luria, *Neurolinguistics*.

Philosophical perspectives on the analytic/synthetic distinction are conveniently assembled in Olshewsky, *Philosophy of Language*. On ambiguity, see Kooij, *Ambiguity in Natural Language*; and on translation, Nida, *Science of Translating*.

6. Components and Contrasts of Meaning

The structure of word-meanings in terms of interrelations with other word-meanings has been studied in many different ways. Two earlier European contributions to structural semantics were that of the German 'Linguistic Field' (or 'Semantic Field') Theorists, and that of the Danish school of Glossematics, led by Louis Hjelmslev. On Field Theory, see Trier, *Deutsche Wortschatz*, and Weisgerber, *Vom Weltbild*, as well as explanations in English by Ullmann, *Principles*, Ch. 3, and Lyons, *Semantics*, Vol. I, Ch. 8. On Glossematics, see Hjelmslev, *Prolegomena*. See also Lehrer, *Semantic Fields*.

Componential analysis proper originated in the work of Lounsbury and Goodenough on kinship terminology (see Bibliography). Perhaps the most thorough study of the subject is that of Nida, *Componential Analysis*, and rather more critical treatments are given by Lyons (*Semantics*, Vol. I, Ch. 10), and Kempson (*Semantic Theory*, Ch. 6).

The terms *hyponymy* and *incompatibility* are derived from Lyons's own work on meaning relations (see *Semantics*, Vol. I, Ch. 9). The theory of Katz and Fodor ('Structure') involved the analysis of dictionary meanings into components called 'markers' and 'distinguishers'. This theory, elaborated and modified in subsequent publications by Katz (see especially *Semantic Theory*), has been criticized by Bolinger ('Atomization') and Weinreich ('Explorations').

While Katz, Weinreich, and others have formalized semantic feature analysis within the general linguistic theory of Transformational Grammar (see under Ch. 17 below), others have concentrated on practical description of such areas as verbs of possession (Bendix, *Componential Analysis*), verbs of motion (Ikegami,

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Semological Structure), cookery terms (Lehrer, *Semantic Fields*), place, time (Bennett, *Spatial*), and modality (Leech, *Semantic Description*).

On semantic oppositions, two early studies were Ogden, *Opposition*, and Sapir, 'Grading'; also well known is Bierwisch's excellent analysis ('German Adjectivals') of spatial oppositions such as *high/low*.

7. Componential Analysis: Extensions and Problems

On semantic redundancy rules, see Bierwisch, 'Certain Problems'; on folk taxonomies, see Frake, 'Ethnographic Study', and Berlin, *et al.*, *Tzeltal Plant Classification*. On marked and unmarked terms, see Lyons, *Semantics*, Vol. I, Ch. 9, Clark and Clark, *Psychology*, Ch. 11, and source references cited there.

With regard to 'fuzzy meaning' and shifting definitions, see Lakoff, 'Hedges', and Labov, 'Boundaries'. Work by Rosch and her associates on the prototypic nature of categories has been reported in a number of articles, including Rosch, 'Cognitive Reference Points', and Rosch and Mervis, 'Family resemblances'.

8. The Semantic Structure of Sentences

Predication analysis has many parallels in recent studies of meaning, but there are technical and terminological variations from one writer or model to another. What are described here as 'predications, predicates, and arguments' have often, in other accounts, been given the grammatical labels 'sentence', 'noun-phrase', and 'verb'; for comment on this point, see Ch. 17, p. 354. It is quite common to use representations in which the verb or predicate precedes the other elements (see McCawley, '*VSO* Language'). Another popular variant of predication analysis, Fillmore's *case grammar* (see 'Case for Case'), allows for the possibility of more than two arguments per predicate. Chafe (*Meaning*), on the other hand, restricts the number of arguments per predicate to one, so that a structure like 'Roger kicked the door', which in the present system would be a two-place predication, is analysed in Chafe's system as one predication embedded inside another. (Here I use the term 'predication', although this is not the term normally used by McCawley, Fillmore, or Chafe.) The relative advantages of these and other methods of representing sentence-meaning are difficult to assess, at least at the present time.

Predication structures, in one variant or another, have been used to describe many areas of meaning. See especially Miller and Johnson-Laird, *Language and Perception*, for an analysis of various semantic fields, such as time, place, and causation, in these terms. Another type of analysis, concentrating on the definition of verbs, is that of Fillmore in 'Verbs of Judging', and 'Lexical Information'.

There have been marked changes in the understanding of selection restrictions since they were popularized by Katz and Fodor in 'Structure' and by Chomsky in *Aspects*. Chomsky formalized selection restrictions in terms of syntactic co-occurrence rules, but McCawley, in 'The Role of Semantics', challenged Chomsky by arguing that selection restrictions are semantic rather than syntactic. Later still, in 'Noun Phrases', McCawley claimed that selection restrictions are to a great extent a matter of extra-linguistic knowledge.

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On the formulation of properties such as tautology and contradiction within linguistic theory, see Katz, *Semantic Theory*, and Fodor, *Meaning in Generative Grammar*.

There is an earlier treatment of downgrading in Leech, *Semantic Description*, Ch. 2.

9. Logic in Everyday Language

For a general background to this chapter, consult Lyons, *Semantics*, Vol. I, Chs. 6 and 7. Quine, *Mathematical Logic*, Reichenbach, *Elements*, and Lemmon, *Beginning Logic*, are handbooks providing an introduction to formal logic. Reichenbach's is exceptional (especially for the time when it was written) in containing an incisive analysis (Part VII) of the logic of everyday conversational language. On the other hand, Reichenbach clearly illustrates the normative tradition of philosophical logic in his critique of 'the deficiencies of conversational language', and also illustrates a mistaken tendency, less common now among philosophers than it used to be, to assume that grammarians are logicians *manqué*.

Lakoff, in 'Natural Logic', has presented a more recent, though also controversial, view of the relation between linguistics and logic, this time from the linguistic side of the fence. Lakoff's view here is that syntax and logic are inseparable aspects of the study of natural language.

An adaptation of symbolic logic to the complexities of natural language has been attempted by Weinreich ('Semantic Structure'), McCawley ('Role of Semantics'), and others. The problems of explaining the function of logical operators in natural language are explored in Horn, *Logical Operators in English*. The following are valuable treatments of more specialized topics: Hawkins, *Definiteness and Indefiniteness*; Carden, *English Quantifiers*; Hogg, *English Quantifier Systems*; (on deixis) Lyons, *Semantics*, Vol. II, Ch. 15, and Fillmore, 'Deictic Categories'.

A notable development in recent years has been the proliferation of 'non-standard logics' dealing with such subjects as tense, modality, permission and obligation, questions and commands. Such logics bring a wide area of natural language semantics within the range of formal logic. For these and other developments in formal logic, see relevant sections of Lyons, *Semantics*, Vol. II, Kempson, *Semantic Theory*, and Dahl, *et al.*, *Logic in Linguistics*; also a recent attractive *vade mecum*, McCawley, *Everything*.

10. Semantics and Syntax

The syntactic categories sketched in this chapter are roughly based on those of Quirk, *et al.*, *Grammar*, Chs. 2 and 7.

This chapter's account of the relation between linguistic levels may be compared with that of Chafe, *Meaning*, from which the notion of 'linearization' is derived. Fillmore, like Chafe, has advocated a semantic representation or 'deep structure' in which linear ordering is unspecified. 'Linearization' and 'thematization' in this chapter correspond approximately to what Fillmore calls 'primary' and 'secondary topicalization' ('Case for Case').

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The technicalities of anaphoric relations are examined from different points of view in Postal, *Cross-over Phenomena*, and Jackendoff, *Semantic Interpretation*. Less technical accounts are to be found in Quirk, *et al.*, *Grammar*, Ch. 10, and in Halliday and Hasan, *Cohesion*. The distinction between coreference and cosemy drawn here partially corresponds to Halliday's distinction between 'reference' and 'substitution'.

The concept of valency has been developed most fully in German linguistics: see Herbst, *et al.*, *Grimm's Grandchildren*, Ch. 4.

Transformations will be discussed further in Ch. 17, a chapter which also resumes the topic of semantics in relation to syntax.

11. Semantics and the Dictionary

On dictionary definitions, see Weinreich, 'Lexicographic Definition', and 'Webster's Third'. On word-formation in English, see Marchand, *Categories*, Adams, *Word-Formation* and Appendix I to Quirk, *et al.*, *Grammar*.

In 'Explorations', Weinreich attempted to formulate processes of semantic transfer under the heading of 'the Construal Rule', and to set up a formal apparatus for accounting for different degrees of productivity and comprehensibility. A different approach to formalizing lexical productivity and systematic relations between lexical entries is that of Jackendoff, 'Morphological and Semantic Regularities'.

Waldron, *Sense*, Chs. 8 and 9, deals with semantic transfer as a historical mechanism of meaning change, whereas Ch. 9 of Leech, *A Linguistic Guide*, is devoted to the operation of rules of transfer in the language of poetry.

From many recent studies of metaphor, the following may be selected: Ortony (ed.), *Metaphor and Thought*, and Lakoff and Johnson, *Metaphors We Live By*.

12. Colour and Kinship: Two Case Studies in 'Universal Semantics'

Since Berlin and Kay (*Basic Color Terms*) put forward their universalist hypothesis of colour semantics in 1969, there has appeared a succession of articles either criticizing, defending, or supplementing their findings. See especially Heider, 'Universals', Kay, 'Synchronic Variability', McNeill, 'Colour and Colour Terminology', and Forbes, 'The Terms *Brun* and *Marron*'.

On kinship semantics, consult the publications of Lounsbury and Goodenough in the Bibliography. Lounsbury, 'Relativism and Kinship', has particular relevance to the theme of semantic universals. A more recent study of kinship semantics is d'Andrade, 'Structure and Syntax'. The componential–predicational kinship analysis presented in this chapter is an elaboration of that in Leech, *Semantic Description*, Ch. 4. This method of analysis has affinities with Lounsbury's 'reduction-rule' method (see, for example, Lounsbury, 'Crow-Omaha').

Recently interest in linguistic universals has led to a wider range of cross-linguistic studies of meaning. Lehrer's study of 'universals' of cookery terminology (*Semantic Fields*, Ch. 8), and Comrie's study of verbal aspect (*Aspect*) are, in their different ways, representative of this welcome trend.

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13. Semantic Equivalence and 'Deep Semantics'

The rules of implication in this chapter and in Ch. 12 are dealt with more technically, under the heading of 'rules of synonymy', in Leech, *Semantic Description*, Ch. 4. The names of some rules have been changed. The use of graphs or networks in the representation of 'deep semantics' is paralleled in the work of Hofmann ('Semantic Studies III'), and of Mel'cuk and his co-workers ('Towards').

14. Presuppositions

Recent views and trends in the study of presupposition are assembled in Oh and Dinneen, *Syntax and Semantics*, 11, and Sag and Prince's 'Bibliography' in that volume gives access to a vast literature on the subject.

Philosophical precursors of the presupposition debate are Russell, 'On Denoting', and Strawson, 'On Referring', in which the concepts of *definite description* and of *presupposition* are respectively introduced. Useful background articles are Garner, 'Presupposition', and Keenen, 'Two Kinds of Presupposition'. Wilson, *Presupposition*, and Kempson, *Presupposition*, oppose logical theories of presupposition, and show how pragmatic explanations can be applied to presuppositional phenomena. The pragmatics of negation is explored by Givón, 'Negation in Language'. The present approach to presupposition is modelled on Gazdar's concept of 'potential presupposition' in *Pragmatics*, and Bickerton's definition of presupposition as '*S* entails *P*, *-S* implicates *P*' (in 'Where Presuppositions Come From'). Cooper, *Presuppositions*, argues for an illocutionary approach to presupposition.

On the relation between presupposition and factors of focus and topic, see Allerton, 'The Notion of "Givenness"', and Sgall, 'Conditions', as well as Chomsky, 'Deep Structure'. On the function of topic or theme generally, see Firbas, 'On Defining', and Li, *Subject and Topic*.

15. Factuality

On factuality and its relation to presupposition and implication, see Kiparsky and Kiparsky, '"Fact"', Karttunen, 'Implicative Verbs', Karttunen, 'Presuppositions of Compound Sentences', and (at a less technical level) Leech, *English Verb*, Ch. 7. On the relation between different kinds of abstraction, see Vendler, 'Facts and Events', and Peterson, 'On Representing Event Reference'. On metalanguage and reference to propositions, see Leech, *Explorations*, Ch. 2.

16. Semantics and Pragmatics

The seminal philosophical works (all highly readable) are Austin, *How to Do Things with Words*, Searle, *Speech Acts*, and Grice, 'Logic and Conversation'. For a brief introduction to speech-act theory, see Coulthard, *Discourse Analysis*. There are many critiques of the performative analysis. See, for example, Searle, 'Speech

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Acts and Recent Linguistics', Gazdar, *Pragmatics*, Ch. 2, and Leech, *Explorations*, Ch. 3. Extension of the performative analysis to the analysis of indirect illocutionary acts are found in Sadock, *Toward*, and in some contributions to Cole and Morgan (eds.), *Syntax and Semantics*, Vol. 3 (see especially Gordon and Lakoff, 'Conversational Postulates'). In the same volume is Searle's 'Indirect Speech Acts', and Stampe's argument ('Meaning and Truth') for what I have called a *complementarist* approach to performatives. For further arguments in this direction, see Leech, *Explorations*, Chs. 3 and 4. In the latter chapter, I develop the application of the politeness principle to the study of indirect illocutions, and this type of analysis is pursued further in Leech, 'Conversational Rhetoric'. An important and detailed article on politeness is Brown and Levinson, 'Universals'. A guide to the immense amount of recent research in pragmatics is provided by Verschueren, *Pragmatics: an Annotated Bibliography*.

17. Alternative Theories

An excellent book discussing versions of semantics within Transformational Grammar is Fodor, *Semantics*. Lyons, *Semantics*, Vol. II, and Kempson, *Semantic Theory*, also provide good coverage of this area. A good practical introduction to transformational syntax is that of Akmajian and Heny, *An Introduction*. In the Generative–Interpretive debate, the Generative Semantics position may be sampled in contributions to McCawley, *Grammar and Meaning*, and to Seuren, *Semantic Syntax*. The Interpretive Semantics position may be sampled in Chomsky, *Studies on Semantics*, and Jackendoff, *Semantic Interpretation*. Chomsky's later revisions of the Extended Standard Theory are presented in *Reflections*, Ch. 3, and 'On Binding'. Katz gives a critique of Chomsky's recent position on semantics in 'Chomsky on Meaning'.

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